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Drug and Cosmetic Industry

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Drug and Cosmetic Industry

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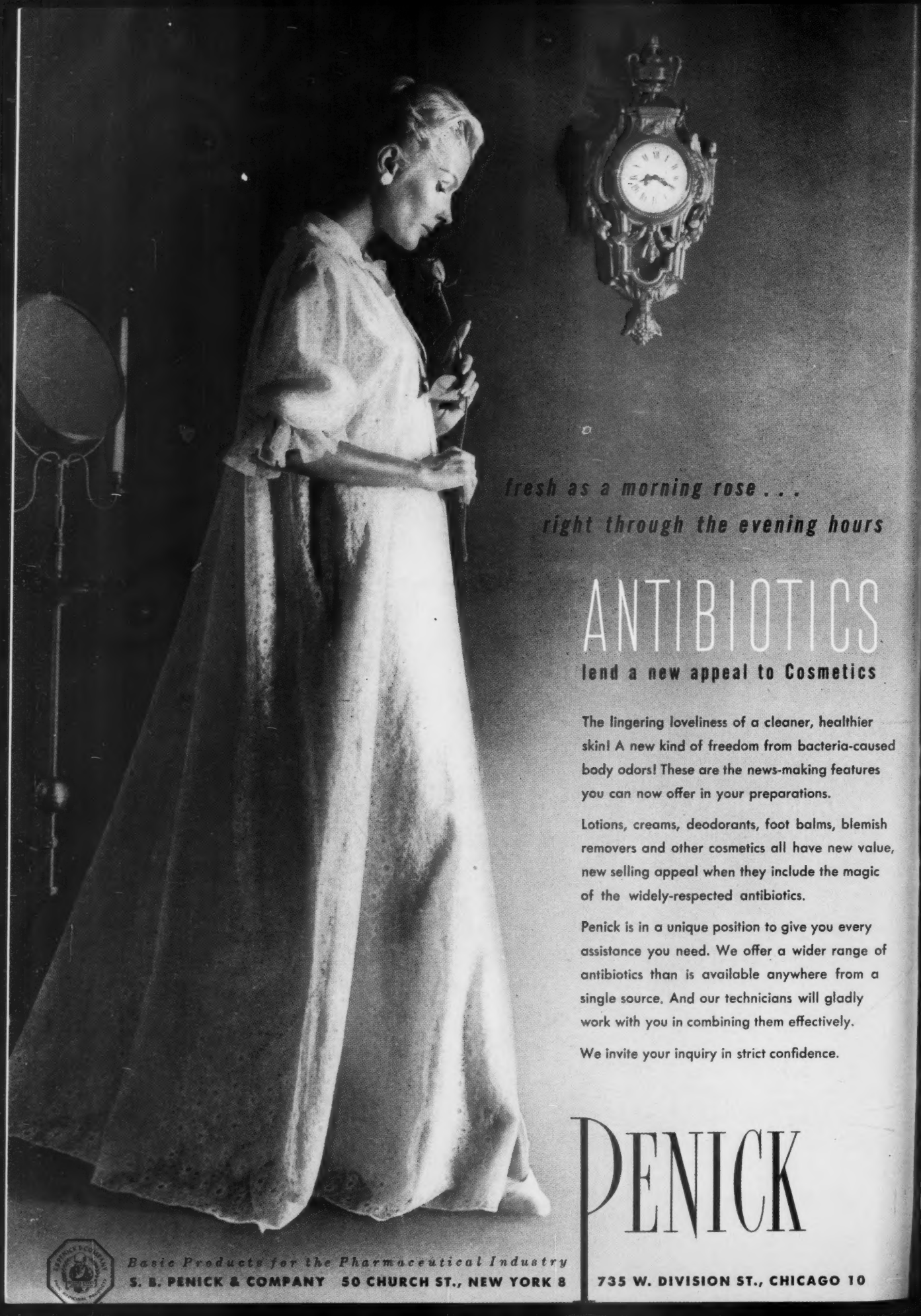

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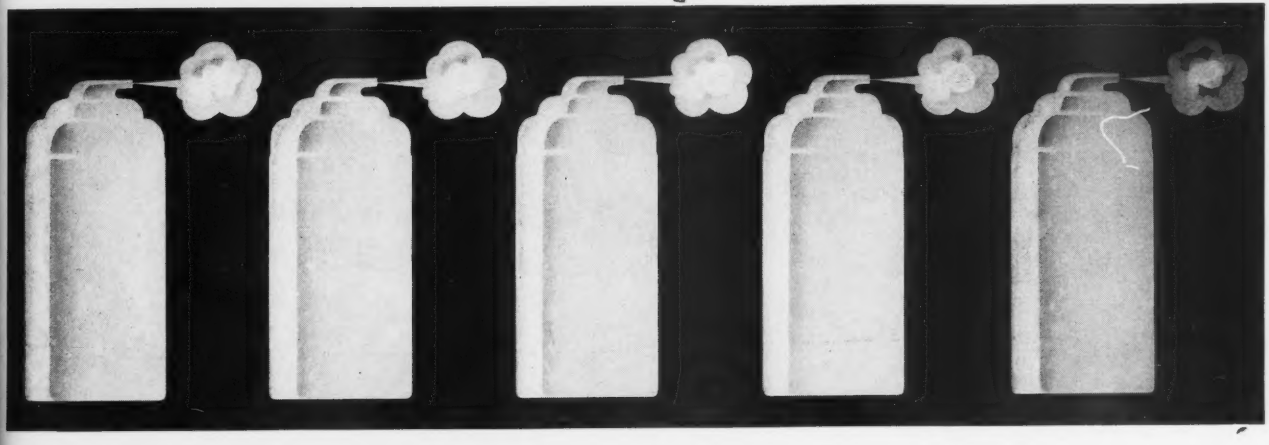

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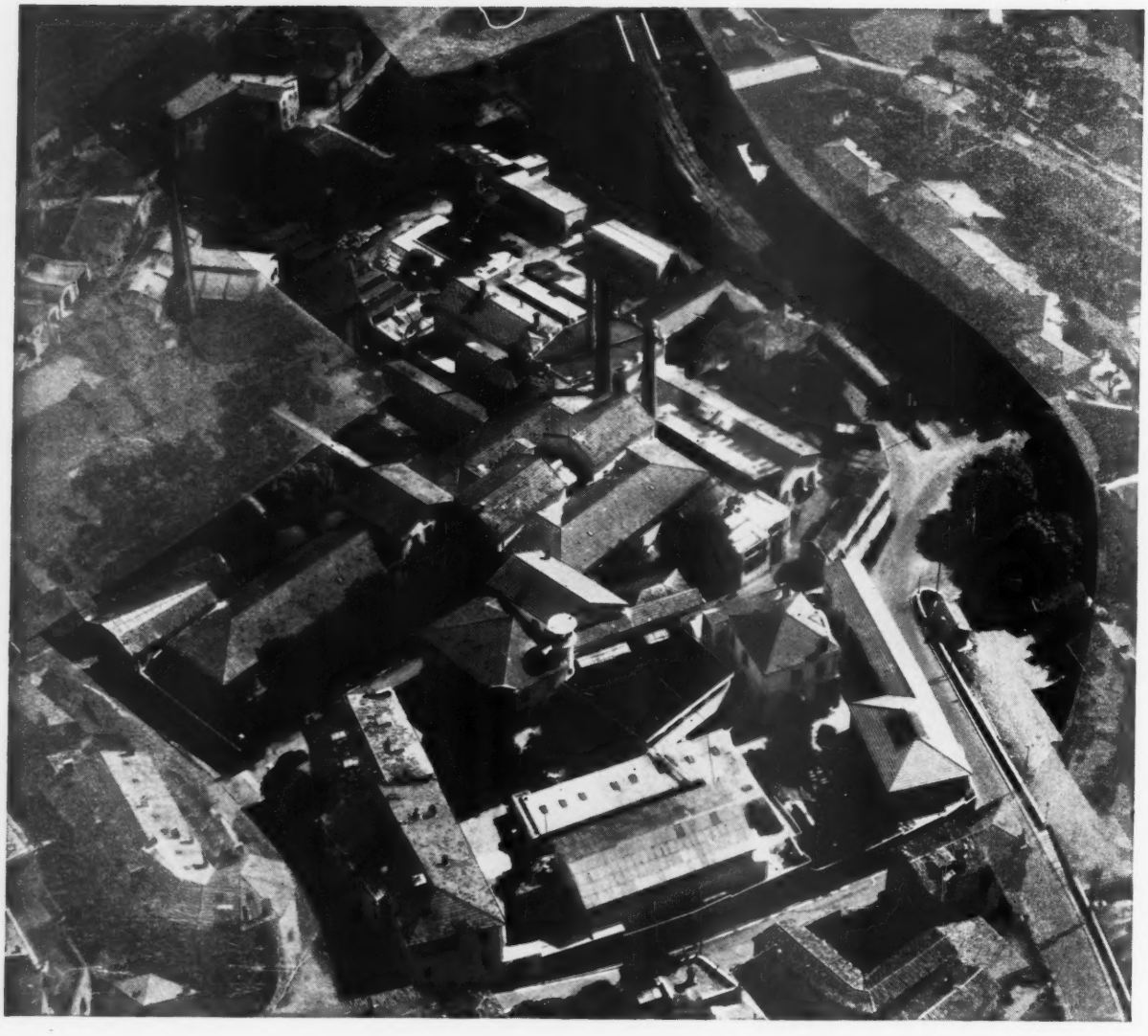

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	SUGGESTED USAGE TO 1 GALLON SYRUP
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Concentrated Imitation Butterscotch Flavor	2 ozs.
Concentrated Imitation Caramel Flavor	1 oz.
Imitation Tame Cherry Flavor 2:1	2 ozs.
Syntharome Imit. Wild Cherry Flavor Special	1/4 to 1/2 oz.
Imitation Wild Cherry Flavor 2:1	2 ozs.
Imitation Chocolate Aroma Flavor	2 ozs.
Cola Type Flavor 1:1	1/2 to 1 oz.
Cola Type Flavor 4:1	4 ozs.
Concentrated Lemon-Lime Flavor	1/4 to 1/2 oz.
Licorice Type Flavor 1:1	1/2 to 1 oz.
Syntharome Imitation Maplenut Flavor	1/2 oz.
Syntharome Imitation Raspberry Flavor	1/4 to 1/2 oz.
Syntharome Imit. Tutti-Frutti Flavor	1/4 to 1/2 oz.
Imitation Tutti-Frutti Flavor 2:1	2 ozs.
Imitation Rum and Butter Flavor	1/2 oz.

The indicated usages to the gallon of syrup are mentioned purely as indications for test evaluation work in manufacturer's own formulations.

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Banana Imitation	2 to 4 oz.
Cherry Imitation	2 to 4 oz.
Cola Type	2 to 4 oz.
Grape Imitation	2 to 4 oz.
Lemon	2 to 4 oz.
Lemon-Lime	2 to 4 oz.
Lime	2 to 4 oz.
Loganberry Imitation	2 to 4 oz.
Maple Imitation	2 to 4 oz.
Orange	2 to 4 oz.
Pineapple Imitation	2 to 4 oz.
Raspberry Imitation	2 to 4 oz.
Root Beer	2 to 4 oz.
Strawberry Imitation	2 to 4 oz.
Tutti-Frutti Imitation	2 to 4 oz.

Other Entrapped Flavors Developed on Request

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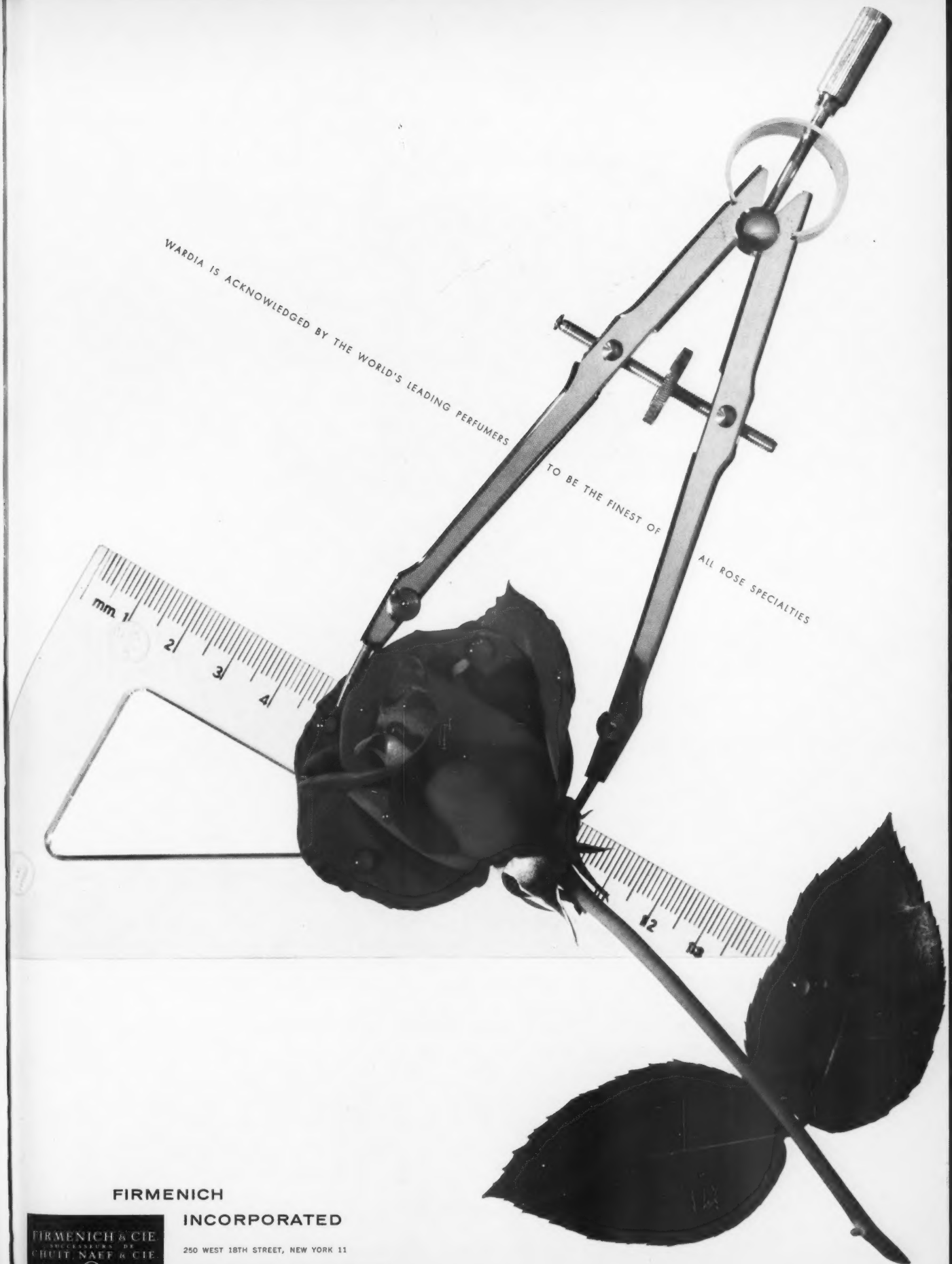

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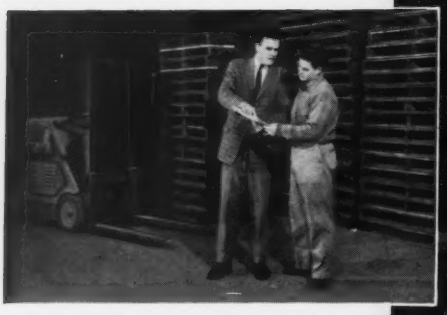
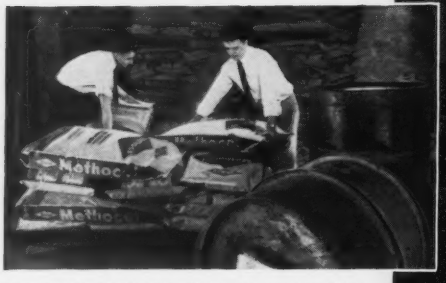
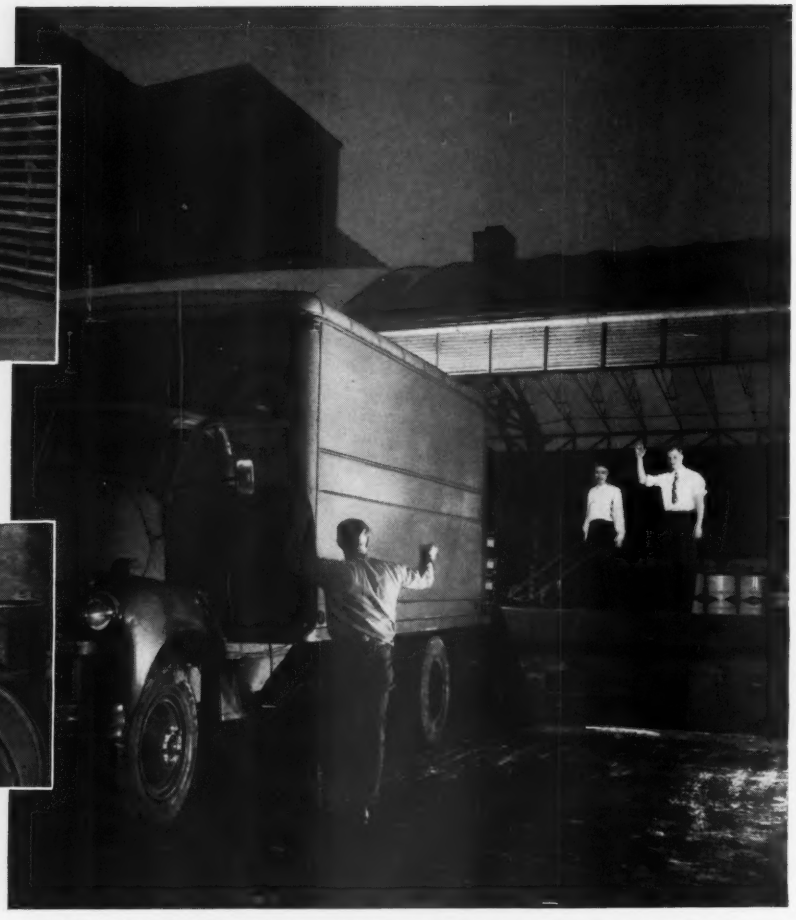


INVENTORY ERROR threatens to halt production at the plant of a large manufacturer in Wisconsin. Unless supplies of two critically needed chemicals are delivered by early evening the second shift will have to be sent home. A long distance call is put through to Merchants' Milwaukee office.



MERCHANTS' WAREHOUSE has been closed for half an hour when the call comes in, but two of the Merchants sales staff volunteer to stay late to help meet the emergency. They load sixty bags and two drums of chemicals onto trucks and flats, ready for pick-up.



AT 8:00 P.M. MANUFACTURER'S TRUCK ARRIVES, is loaded quickly, takes off for a fast return trip. Dinner was late that night for the two Merchants men, but they had been able to help a customer out of a tight spot. That kind of customer service is a tradition at Merchants Chemical.

THEY WERE READY TO SEND THE SECOND SHIFT HOME, UNTIL...

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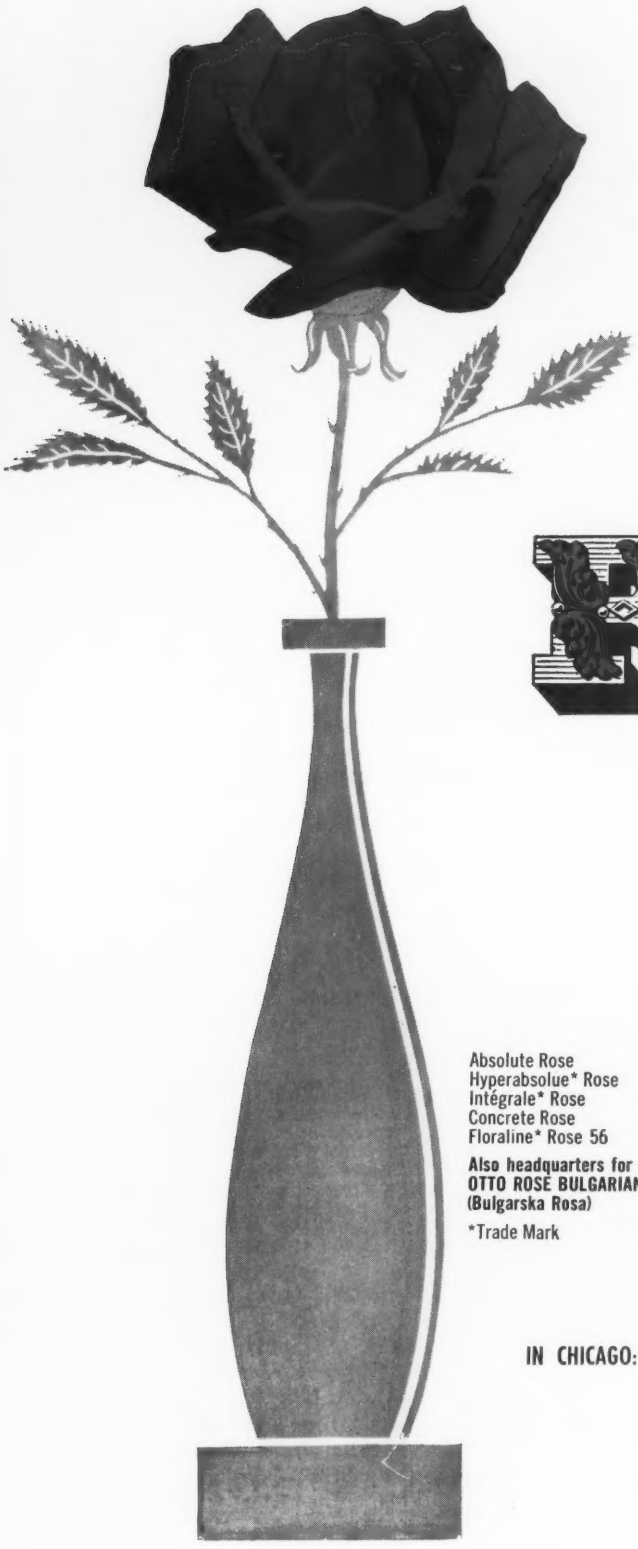

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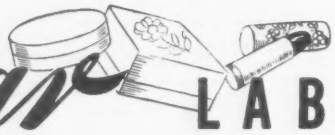
Kolmar  LABORATORIES

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Keeping Posted

Revlon Buys Schering Stock

The rumors that have been flying around for a long time regarding the possible purchase by Revlon, Inc. of various pharmaceutical manufacturers finally came to an end with an announcement by Revlon President Charles Revson that the company has bought over recent months a total of 150,000 shares of Schering Corporation.

Mr. Revson states that "in line with Revlon's policy of diversification, it has been its intention to enter the ethical drug field. A careful survey indicated that it would be unwise for Revlon to pioneer such an operation. It was, therefore, deemed advisable to make a substantial investment in an ethical drug company embodying extensive research, stability and growth possibilities. Revlon management felt that Schering met these requirements."

The 150,000 shares, at a market value of approximately $80 per share, represent an investment of $12,000,000. This is approximately 8.5 per cent of the total value of the company which consists of 1,760,000 shares at about $80 per share, or a total market value of about $140,800,000.

It will be recalled that in early 1952 Schering was bought from the U.S. Government for $29,131,960. The number of shares sold by the investment house making the purchase was 1,760,000, which were offered at $17.50 each for a total subscription of $30,750,000.

Schering eranings for 1956 were $10,624,778, or $6.04 a share, on sales of $54,553,704. Earnings for 1951—the year preceding the sale of the company—were $1,374,324 on sales of $15,444,108.

Revlon earned $8,375,502, or $3.14 a share, on net sales of $85,767,651 in 1956. Revlon has over 2,600,000 common and class B shares outstanding.

Fair Trade Loses in Indiana

Add another state to those in which fair trade will henceforth be a dead number. That state is Indiana, the highest court of which has held the non-signer clause of the state's fair trade act unconstitutional in a case brought by Bissell Carpet Sweeper Company of Michigan against the Shane Company, an Indianapolis discount house. The court's decision held that it was not constitutional to apply the state's fair trade law to a retailer who did not have a contract with the manufacturer or to a manufacturer who induced a retailer to break such a contract. The American Fair Trade Council, which had acted as "friend of the court," sees no further action.

The high court ruled on a decision in the Marion County Superior Court in which the judge ruled against the manufacturer. The Supreme Court's decision was not unanimous. Three members of the court, while supporting the majority decision in principle, questioned the reasoning by which the conclusion was reached. A fourth member of the five-man court dissented. The three judges disagreed with the opinion that the "Fair Trade Law is an unconstitutional delegation of legislative power." They said this implied that the state General Assembly has the power under the constitution to provide an agency with the power to fix prices.

House-to-House Vitamins

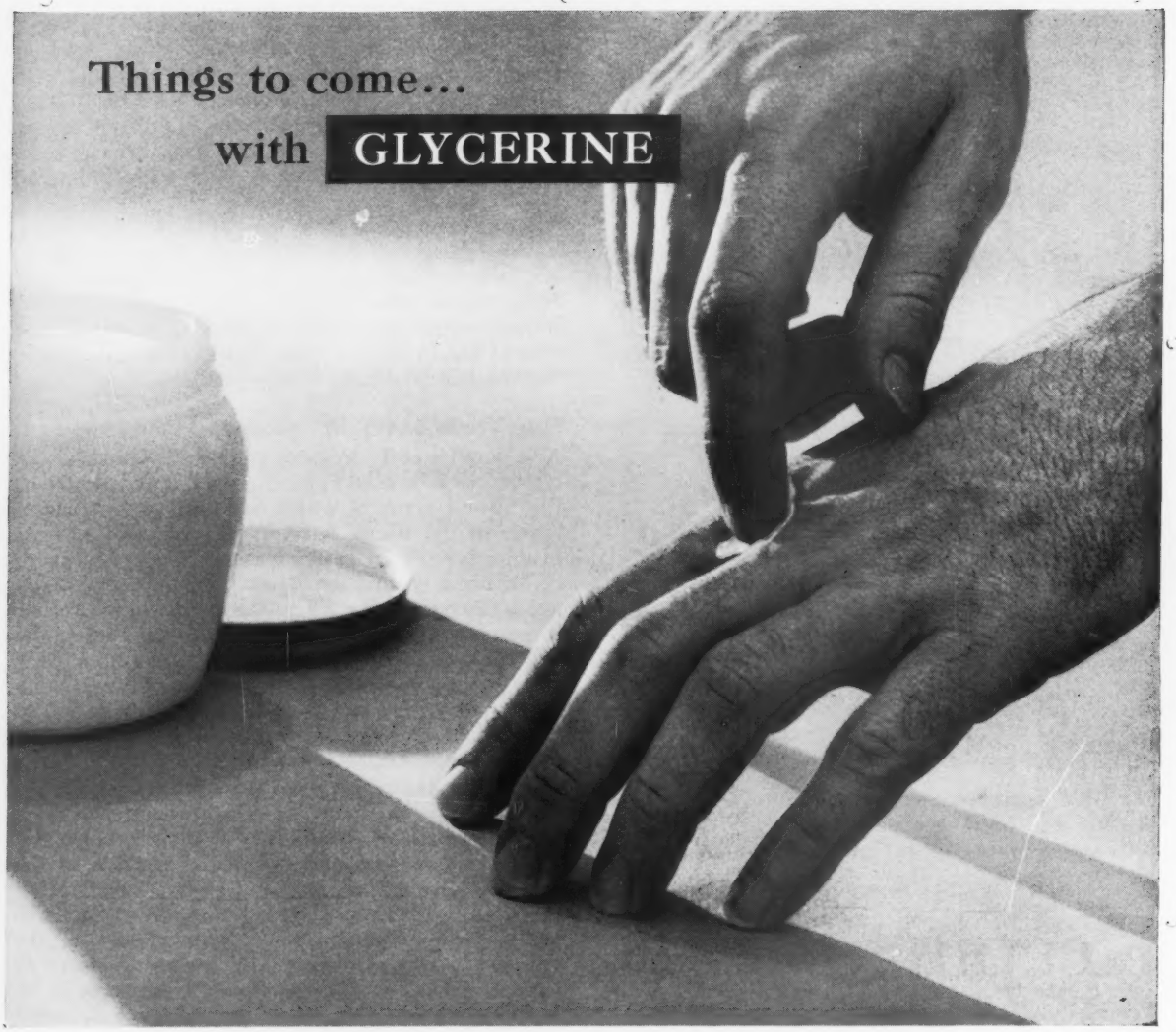
In a recent case brought by the Food and Drug Administration against a house-to-house selling organization primarily interested in sales of vitamins, the trial, held before a jury, lasted three weeks. The owner was sentenced to a year in prison and the firm was fined $6,000. In an FDA release on the case, the following appears:

"A 20-page opinion, by Chief Judge Calvert Magruder, sustained the Food and Drug Administration's charges that literature and claims used in selling 'natural' vitamin-mineral supplements constituted misbranding under the Federal Food and Drug Law. Specifically, the following claims, which were litigated in the trial, were held to be false and misleading:

"1. That nearly everyone in this country is suffering from malnutrition or in danger of such suffering.

"2. That the soils of the U.S. are demineralized and depleted (thus producing non-nutritive food).

"3. That processing and refining of foods destroys their nutritive value.



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The fungicide works this way: Esterase, an enzyme present in skin, serum and in many fungi, hydrolyzes the triglyceride to glycerine and acetic acid—the chemical which actually inhibits the fungi. Accumulation of the acid, however, causes the pH to drop to a level which decreases esterase activity. This in turn slows up production of the acetic acid, keeping it well within physiological tolerance. As the acid is neutralized, the pH rises and the cycle starts again.

The new fungicide is expected to be marketed soon. Meanwhile, other triglycerides are under investigation as new chemotherapeutic agents.

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"4. That practically all illness and diseases of mankind are due to improper nutrition.
"5. That the best way to treat, cure, and prevent all the diseases of mankind would be by using the ———products."
"Listed as deficiency diseases in the sales literature are such ailments as diabetes, infantile paralysis, rheumatism, dementia praecox, tuberculosis, and cancer.
"Judge Magruder said that prospective purchasers are more likely than not to be persons who are pathetically eager to find some simple cure-all for the diseases with which they are afflicted, or who are susceptible to luridly painted scare literature as to the prospect of being disease-ridden unless they consistently partake of the vaunted drug product."
Although the FDA claims that the numbered paragraphs above have been litigated in this case, it would seem that some doubt exists as to the conclusions of the first three paragraphs. If there was not some truth in these statements, the sale of vitamin preparations in this country by all types of sellers would only be a very small percentage of what they are. Certainly the medical profession sees enough cases of people deficient in vitamins to make their proper use quite widespread. And certainly claims based on these first three paragraphs are not restricted to house-to-house sellers of vitamins alone.

Tranquilizer Symposium

The tranquilizing drugs are "here to stay," Dr. Eaton M. McKay of Beverly Hills, California, a member of the American Board of Internal Medicine, told a symposium on tranquilizing drugs sponsored by the Southern California Psychiatric Society at Hollywood last month. These new drugs "already appear to have done far more good than any undesirable actions they may have," he said, adding that as in internist "who must consider the patient as a whole," the increasing use of these drugs in psychiatry represents "a far more satisfactory viewpoint than the idea that the mind is an imaginary structure in the ether."
"Most patients with physical disease have significant emotional reactions to that disease and could be benefited by being more at ease about their illness," said Dr. Raymond W. Waggoner, chairman of the Psychiatry Department at the University of Michigan Dental School. Use of tranquilizers, he said, "has increased the ability of the physician without psychiatric training" to handle such patients.
Endorsing the research work performed on tranquilizers, Dr. Norman Q. Brill, chairman of the Department of Psychiatry of the UCLA School of Medicine, said that this research "has produced a series of drugs which are helpful in management of patients with emotional disorders and has stimulated interest in the treatment of these patients, who for too long a time were relatively ignored by most of the medical profession." However, Dr. Brill warned that while most of the tranquilizing drugs are safe enough under clinical supervision, the major danger is to "exaggerate their effectiveness."
Branding as "unfairly critical" the attitude of those who contend that tranquilizers are merely "chemical strait jackets designed to make the patient more emenable and submissive, Dr. James G. Miller, Professor of Psychiatry at the University of Michigan Medical School, reminded such critics that similar things were said when the anesthetics first appeared, by those who, in effect, challenged the right of physicians to ease pain.
Describing studies to determine effects of tranquilizers on normal persons, Dr. Miller said that one thing indicated was that even twice the normal dosage of meprobamate has no effects on the skills required for safe driving.
Dr. Waggoner showed charts describing the usage, dosages, and potential side effects of thirteen tranquilizers in use today, including the three most widely used—chlorpromazine, reserpine, and meprobamate. Of the three—used successfully in treating more than a score of physical and emotional ailments —only meprobamate had no reported contraindications, he said, indicating that it may be given without danger in the presence of any disease or condition.
Dr. Ralph W. Gerard, Professor of Neurophysiology at the University Of Michigan Medical School, described tranquilizers such as chlorpromazine, reserpine, azocyclonol and hydroxyzine as most effective in the treatment of psychoses, and meprobamate of greatest value in "the larger population of neurotic and tense individuals."

Vick Makes Ten-Year Grant

One of the largest grants for medical research ever given by a pharmaceutical company has been made by the National Drug Company of Philadelphia, a subsidiary of Vick Chemical Company. The company has made a ten-year grant of $1,056,000 to the Johns Hopkins School of Hygiene and Public Health to enable Dr. Winston H. Price, Associate Professor of epidemiology and biochemistry, to carry out a research program in the field of the upper respiratory tract and complications resulting from such infections, particularly rheumatic heart disease. In addition, Dr. Price will act as consultant in medical research to National Drug and Vick.
E. L. Mabry, president of Vick Chemical Company, said that this grant represents only one segment of Vick's expanding research in the important fields of the common cold and related virus diseases. Vick's two pharmaceutical divisions, the National Drug Company and the Wm. S. Merrell Company, are substantially enlarging their research facilities and research organizations for conducting tissue culture research for creating vaccines and other immunizing preparations for these diseases. These programs also involve expansion of National Drug's tissue culture production facilities at Swiftwater, Pennsylvania. In addition, Vick is expanding its research for development of new and improved preparations for symptomatic relief of colds as well as other products to extend its well-known line of specialized home medications. Mr. Mabry says that total research expenditures in the next fiscal year will be seventy per cent more than in 1955-56. Capital expenditures for enlarged research facilities are estimated at more than $1.5 million for the next twelve months.

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Bobst Gives to Columbia Pharmacy

At a luncheon given in his honor in the Grand Ballroom of the Waldorf-Astoria Hotel in New York, celebrating completion of fifty years in pharmacy, Elmer H. Bobst, chairman of the board of Warner-Lambert Pharmaceutical Company, announced gifts of $600,000 to the Columbia University College of Pharmacy. The contributions consisted of $500,000 from the Pfeiffer Foundation, and $100,000 from Mr. Bobst personally. These gifts are the start of a three million dollar fund to be raised by a committee under Mr. Bobst to erect a new building for the college close to Columbia University, which new building will make possible the inauguration of the Bobst-Columbia Plan for Pharmaceutical Education. Dr. Morris Fishbein was toastmaster at the luncheon which was addressed by, among others, Dr. David B. Allman, president of the American Medical Association, Leo Roon, vice-president, board of trustees, Columbia University College of Pharmacy, and Dr. Davis A. Wood, president of the American Cancer Society.

New Non-Coal-Tar Color Definition

The Food and Drug Administration, early last month, rejected the so-called Hoffmann-La Roche definition which was offered in an attempt to define more exactly those classes of colors which are exempt from certification by the FDA under the Food, Drug, and Cosmetic Act. The industry had protested that the definition proposed by the FDA was too broad, and they offered their own substitute which became known as the Hoffmann-La Roche definition. This would extend the exemption of certain vegetable colors to "identical compounds produced by chemical synthesis without change of chemical structure."

No reason was given for rejection of the industry's proposed definition. The FDA simply said that after due consideration it had concluded that it was in the interest of consumers to adopt, with minor changes, its own definition. This definition adds the following exception to the present definition of coal tar colors now contained in the regulations of the Food, Drug, and Cosmetic Act:

"Except from the following substances are not regarded as coal tar colors:—Carotenoids isolated from vegetable sources without intermediate or final change of identity (including annatto and bixin and their salts obtained from the seeds of the tree bixa orellana by extraction with aqueous alkalies or other suitable solvents); cochineal or carmine from coccus cacti; alkanet from alkanna tinctoria; chlorophyll from vegetable sources; carbon black; charcoal black; caramel obtained from carbohydrates from heating; tumeric or curcumin (rhizomes of curcuma longa) and coloring matter extracted therefrom; saffron (stigmata of crocus sativus) and coloring matter extracted therefrom."

This new definition would go into effect in ninety days except for any provisions which might be stayed by filing of exceptions thereto. Objectors were given thirty days to protest the ruling and specifying exactly how they would be injured, and the particular provisions deemed objectionable.

Beneficial Bacterium Found

A new bacterial organism with promising therapeutic and industrial properties has been found in the cold and almost lifeless lakes of the Ruwenzori Mountains that tower above Mutsora, Belgian Congo. Called Inflabilis lacustris, the organism has the property of digesting urea. For this reason the team of Belgian and French scientists who found and isolated the organism consider that it may be used to alleviate rheumatic disorders. Seven cultures of the bacteria have been prepared from 300 samples of Ruwenzori Lake water sent to the Pasteur Institute in Paris.

Because the Ruwenzori is composed of very old rocks known as Pre-Cambrian, which were laid down at least 800,000,000 years ago, Professor Victor van Straelen, president of the national parks of the Belgian Congo, considered that vegetation uncontaminated by the waste products of animals and man might contain micro-organisms new to science. Aerial photographs revealed the presence of lakes at an altitude of about 12,000 feet. The new species of bacteria is very common to some of the lakes, and is capable of living in almost airless conditions. It lives on urea in the cold water, which it converts to its own internal requirements by means of urease.

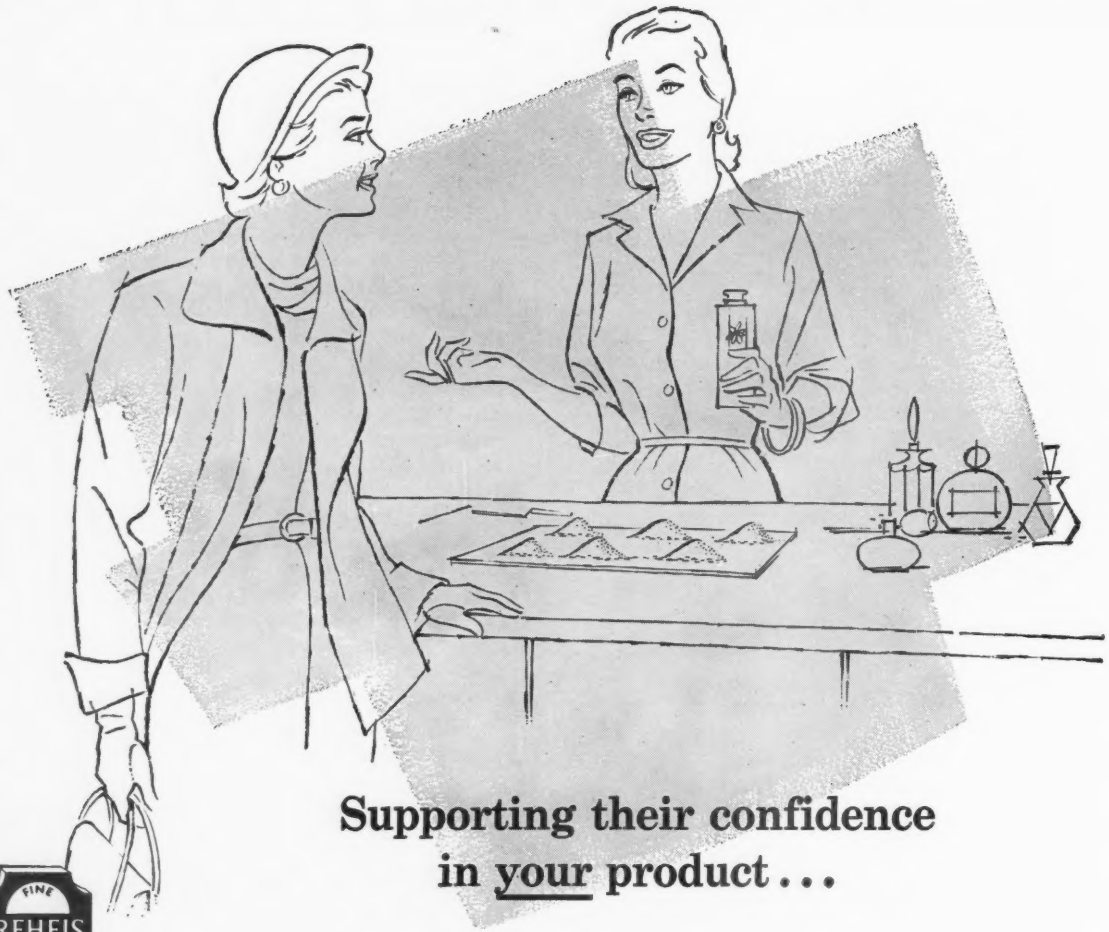
Pharmaceutical Research Discussion Group

Organized at the end of 1955 through its first chairman, Frank Reinish of White Laboratories, and the initial Steering Committee, Richard Barry of Union Pharmacal Company and Anthony Correnta of Organon, the Pharmaceutical Research Discussion Group now has twenty members representing an equal number of pharmaceutical firms in the New York-New Jersey area. Officers for this year are: Chairman, Jack Cooper of Ciba Pharmaceutical Products Company; Secretary-Treasurer, Frank Reinish of White Laboratories; Steering Committee, Charles Jarowsky of Chas. Pfizer & Co., and Anthony Corrente of Organon.

The scope and objectives of the group are 1. To promote closer professional relationships among personnel engaged in pharmaceutical formulation and development. 2. To provide a medium for the informal discussion of general, non-confidential information as it relates to the formulation, testing, and development of pharmaceutical dosage forms and equipment involved in preparation of such products. 3. To disseminate knowledge of pharmaceutical technology through the medium of guest speakers, films, and plant visits. Luncheon meetings are held monthly except during June through August.

Anti-Cancer Chemicals Search

Stanford Research Institute, Menlo Parl, California, has underway a major search for anti-cancer compounds. The $450,000 per year research effort in collaboration with the Sloan-Kettering Institute for Cancer Research, is supported by Cancer Chemotherapy National Service Center, National Institutes of Health, and Stamford Research Institute. The three-phase program is headed by Dr. Bernard R. Baker, with Dr. Leon Goodman as group leader. In the first phase, staff organic chemists are synthesizing



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various new organic chemicals. A second group is analyzing the new compounds to determine their compositions. Finally, compounds are prepared in quantity by a third group for anti-cancer testing at the Sloan-Kettering Institute, and other institutions participating in the national program sponsored by the National Institutes of Health.

Another cancer program has been underway since early 1956 in SRI's biology department. The Institute is one of six U.S. research laboratories that have been screening various chemical compounds under contracts awarded by the Cancer Chemotherapy National Service Center. Others taking part in this program are: Microbiological Associates, Bethesda, Md.; Wisconsin Alumni Research Foundation, Madison, Wis.; Southern Research Institute, Birmingham, Ala.; Hazleton Laboratories, Falls Church, Va.; and Arthur D. Little, Inc., Boston.

A.M.A. Honors Parke, Davis

The American Medical Association awarded to Parke, Davis & Company a citation "for the service it has performed to the public and to the nation through its continuing series of institutional messages published in national magazines, which accurately and dramatically tell the story of medicine and medical progress." The citation added, "Because of these outstanding contributions to the public understanding of medicine, you have proved yourself deserving of this special recognition." The presentation was made by Dr. Gunnar Gundersen of LaCrosse, Wisconsin, chairman of the AMA Board of Trustees, to Parke, Davis president Harry J. Loynd at the opening session of the House of Delegates at the recent annual convention in New York. Dr. Gundersen said, "Parke, Davis began advertising in national magazines on behalf of the medical profession in July, 1928. Since that time, the company has published 246 advertisements, nearly all of which have dealt with socio-economic and health education topics. "This year, The Saturday Review's 'fifth annual advertising awards' survey gave Parke, Davis a citation for its public service campaign in 1956, primarily dedicated to explaining the cost of medical care. The pharmaceutical company has consulted with representatives of the American Medical Association frequently over the years in order to present advertisements which would encourage people to make full and wise use of medical services in the United States . . . "The advertisements have had considerable influence on the general public and have caused national publications to single out Parke, Davis again and again for the company's distinguished advertising in the public interest."

Medicine Lags on Infant Care

Medicine has made much progress in the care of mothers at childbirth, but care of infants has lagged, according to Dr. John H. Ferguson, chairman of the Department of Obstetrics and Gynecology of the University of Miami in Florida. Three main considerations are involved in the death of babies, he said: These are the general health of the mother, the condition of pregnancy and labor, and the condition of the baby. The general health of mothers has improved along with the health of all persons in the United States, he said, and conditions of labor and pregnancy are improving as obstetricians become better trained. The condition of the baby and its environment before birth are the areas in which progress can be made. Closer cooperation between obstetricians and pediatricians will assure that babies are protected as well as the mothers during birth.

Trademarks for U. S. Agents

Trademark rights under the Lanham Act shall be granted to the purchaser of the trademark and business of a foreign manufacturer according to a decision of the District Court of the District of Columbia. The court held that the buyer of the United States business of a foreign manufacturer, including goodwill and trademarks, can protect himself against the sale of these same products in this country, even if these sales are made by the manufacturer and owner of the trademark abroad.

The litigant in this case was E. Leitz, Inc., seller in this country of the Leica camera, its accessories and optical goods manufactured by Leitz of Germany. E. Leitz, Inc. sued the Commissioner of Patents to compel the Commissioner to grant a trademark under the Lanham Act. The Assistant Commissioner of Patents, Mrs. Daphne Roberts Leeds, had denied the application on the grounds that ownership of the mark remained at the place where the goods were manufactured.

This decision is extremely important to agents of foreign manufacturers in this industry, of which there are quite a few in the perfume branch of the industry.

Noscapine Approved for Coughs

The use of noscapine for use in cough remedies was recently approved in an interview for the Voice of America by U.S. Narcotics Commissioner Harry J. Anslinger in the following words:

"Dr. Nathan B. Eddy, a medical officer at the National Institutes of Health of the U.S. Public Health Service and internationally known expert in the field, reported to the Commission that long search for drugs which would relieve pain or cough without danger of addiction or of other undesirable effects had attained success at least as far as cough remedies are concerned. Overcoming these disadvantages is particularly important for chronic coughers who must have relief over a long period of time. Newly discovered properties of an old drug, noscapine (formerly called narcotine) and demonstration of cough-relieving effects of non-addicting synthetic substances is the measure of success to which Dr. Eddy referred. Noscapine is as effective for cough remedies as codiene, the long recognized standard for anti-cough remedies, and if the occasion requires, its dose can be increased without undesirable effects. Although noscapine is a natural ingredient of opium, it is chemically different from morphine and its derivatives and has been proven through long experience and specific tests to be completely non-addicting and safe for all types of patients, young and old."

Contributions to Health Agencies

In a report on Corporate Contributions to National Health Agencies based on a survey conducted by the National Better Business Bureau in cooperation with its Solicitations Panel which is composed of 284 large, medium-sized, and small business firms, as well as 26 national health agencies, the following information was obtained:

1. Nearly all national business firms are supporting national health agencies both through direct contributions and through United Funds or Community chests.
2. The number of health agencies to which the average company contributes has doubled during the past five years.
3. There is a general lack of fixed policy among business firms in determining what agencies to support or how much to give. Criteria are not uniform and are generally vague.
4. Earmarking for specific purposes is negligible.
5. The field of national health agencies is a rapidly expanding one, with contributions and expenditures mounting annually. The total cost of health services in the United States today is about $13 billion.

Further information obtained from this survey in which seventy per cent returned questionnaires, of which 158 were complete and compatible, indicated the ways in which business contributes:

1. Direct donations: Twelve national health agencies reported that, during their last fiscal year, contributions to these agencies mounted to $10.5 million, or approximately 9 per cent of all contributions received.
2. Indirect giving: During 1956, business contributed approximately $4 million to national health agencies through federated fund drives. United Community Funds and Councils of America reported that 73 per cent of the $379,100,000 raised for all "causes" in 1956 campaigns, to be allocated in 1957, came from corporations and their employees.
3. Taxes: The 1956 appropriation to the National Institutes of Health totalled $99,300,000 of which $92,100,000 was allocated for research and other purposes in various health fields. This is tax money, provided in a large degree by business.

These figures do not include the Red Cross which received between 30 and 40 per cent of its 1956 campaign money, $85,109,400, from corporations. The national total included $37,000,000 from United Funds, of which business contributed approximately $11 million.

While 115 of the corporations participating in the survey thought that the "relation of the cause to the need of society" was the principal reason for giving, 63 thought the personal interest of executives was responsible. "Effect of disease on the economy" was given as a reason by 41 panelists who cited the following reasons: loss of man-hours; absenteeism; health affects the number of people who can work; company success depends on employee health; health affects the sale of products.

The survey quotes some staggering figures on the effects of alcoholism. The man-hour loss to industry from this cause is at the astronomical figure of 352 million, or 22 working days per alcoholic employee.

Vitamin Foundation Grants

Grants-in-aid totaling $95,393 have been awarded in the first half of 1957 to university investigators for research in nutritional biochemistry and metabolism by the National Vitamin Foundation. Included among these grants are:

Drs. William B. Bean and Robert E. Hodges, State University of Iowa, $8,300 for continuation of investigations of pantothenic acid and its antagonists in human volunteers. Dr. Albert E. Einstein, Washington University School of Medicine, St. Louis, $5,000 for continuing studies of the relationship of dietary factors to the production of adrenal steroid hormones. Drs. R. S. Goodhart, B. F. Chow, and S. A. Tauber, The Nutrition Clinics Fund, New York, $11,500 for continuation of studies of B_{12} and B_6 metabolism in the aged. Dr. George J. Gabuzda, Western Reserve University School of Medicine, Cleveland, $1,200 for continuing studies of the metabolism and interrelationship of folic acid, citrovorum factor and ascorbic acid. Dr. Albert L. Lehninger, Johns Hopkins University School of Medicine, $5,650 annually for two years for further studies of enzymatic and genetic aspects of ascorbic acid synthesis in animal tissues; biological function of ascorbic acid. Dr. Herman C. Lichstein, University of Minnesota Medical School, $2,700 for continuing studies of compounds structurally related to biotin for the study of the mechanism of action of biotin.

Also Dr. O. Neal Miller, Tulane University School of Medicine, $8,500 for continuing studies of the metabolism of vitamin B_{12}. Dr. Robert Olson, Graduate School of Public Health, Pittsburgh, $7,528 for continuing studies of the role of dietary protein, choline and fatty acids in controlling serum lipid and lipoprotein levels in rat and man. Dr. Joseph Seronde Jr., Laboratory of Comparative Pathology, Maynard, Mass., $3,915 for a morphological investigation of ulcers and other duodenal changes arising in adult pantothenate-deficient rats. Dr. Theodore L. Sourkes, McGill University and Allan Memorial Institute of Psychiatry, Montreal, $4,050 for studies of the role of nutritional factors in the formation of catecholamines. Dr. Walter Unglaub, Tulane University School of Medicine, $10,000 annually for two years for studies of pyridoxine metabolism in pregnancy, with particular reference to arteriosclerotic changes in placental vessels. Dr. Theodore F. Zucker, Columbia University College of Physicians and Surgeons, $6,800 for continuing studies of immediate versus remote results of pantothenic acid deficiency in adult rats. Supplementary grants to aid the research of Dr. Robert Hillman of the State of New York University of New York, Brooklyn ($4,000), and Dr. George Wolf of the University of Illinois ($600).

More Tetracycline Patents to Bristol

The second major patent in five weeks on improved forms of tetracycline has been issued to Bristol Laboratories. The new patent, relating to mixtures of tetracycline with phosphate compounds, is believed to cover all existing tetracycline phosphate mixtures.

Which qualities of **Baker** AMMONIUM CHLORIDE, U.S.P., Granular are important to you?

HIGH PURITY—FREEDOM FROM EXTRANEOUS MATTER

Baker Ammonium Chloride, U.S.P., Granular is a product of synthesis, manufactured in new and enlarged facilities. Purity is safeguarded in many ways—selected starting materials are reacted in specialized equipment in a completely closed system—filtered air is used in the production area—there is close process control at every point. Representative analyses show very low insoluble matter.

DUAL-PURPOSE GRANULATION—FOR TABLETS OR LIQUID PRODUCTS

The particle size is suitable both for direct compression into tablets and for rapid solution of liquid products. You eliminate duplicate inventories—and reduce production costs.

EASY TO HANDLE FOR TROUBLE-FREE COMPOUNDING

Special drying equipment, capable of close temperature control, assures low residual moisture (typically 0.1%). And thorough blending is another important step in achieving uniformity.

PROTECTIVE PACKAGING

Drums with polyethylene liners, filled directly from the blender, protect purity during transit and storage—help prevent moisture pick-up.

Ammonium Chloride, U.S.P. is also available in Powder form.

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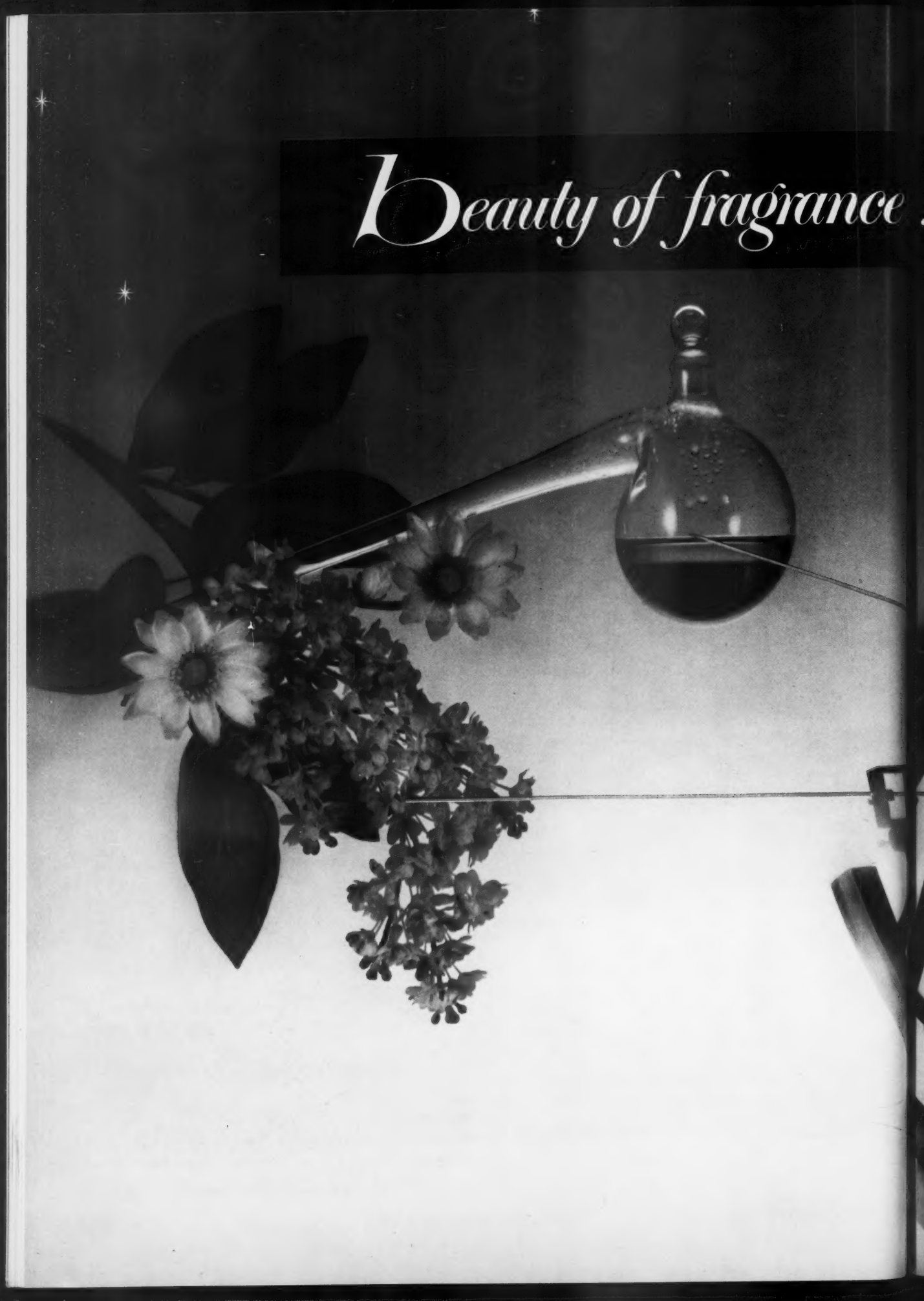
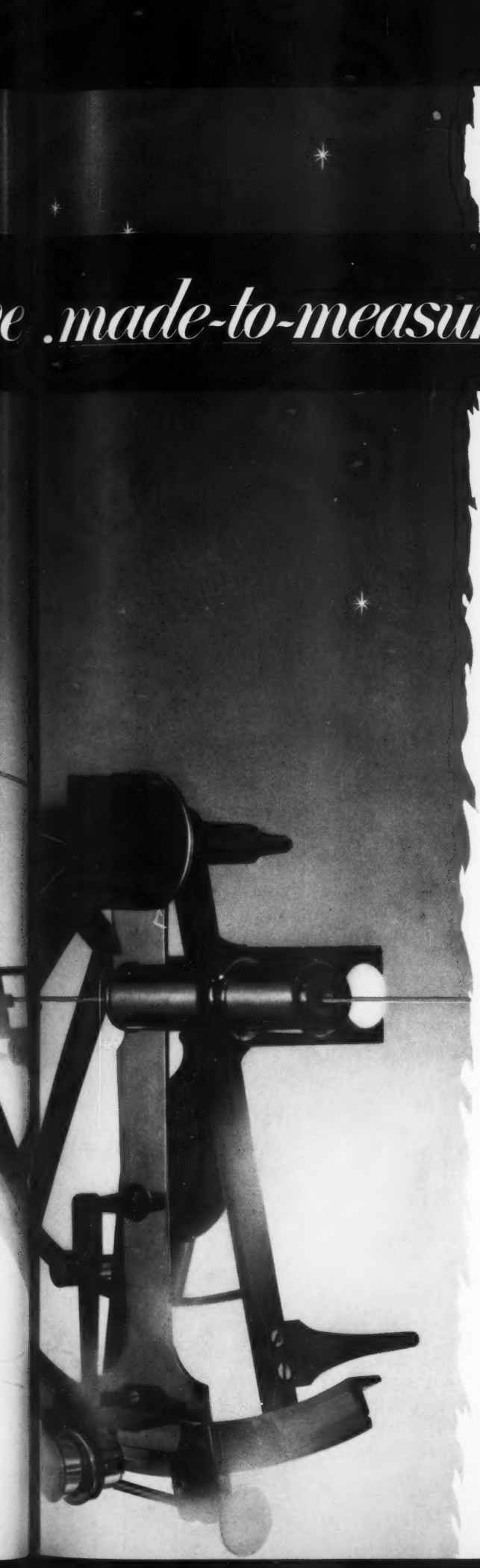

Beauty of fragrance



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The creation of a fragrance that brings success to a perfume or cosmetic demands superior skill and artistry—and a thorough knowledge of consumer preferences.

It requires long experience in fragrance application and a wide variety of quality materials.

Givaudan's skilled perfumers, working with advanced research and production facilities and the advantage of world-wide resources, bring you fragrances of true beauty and originality—made-to-measure for your success!

GIVAUDAN-DELAWANNA, INC.
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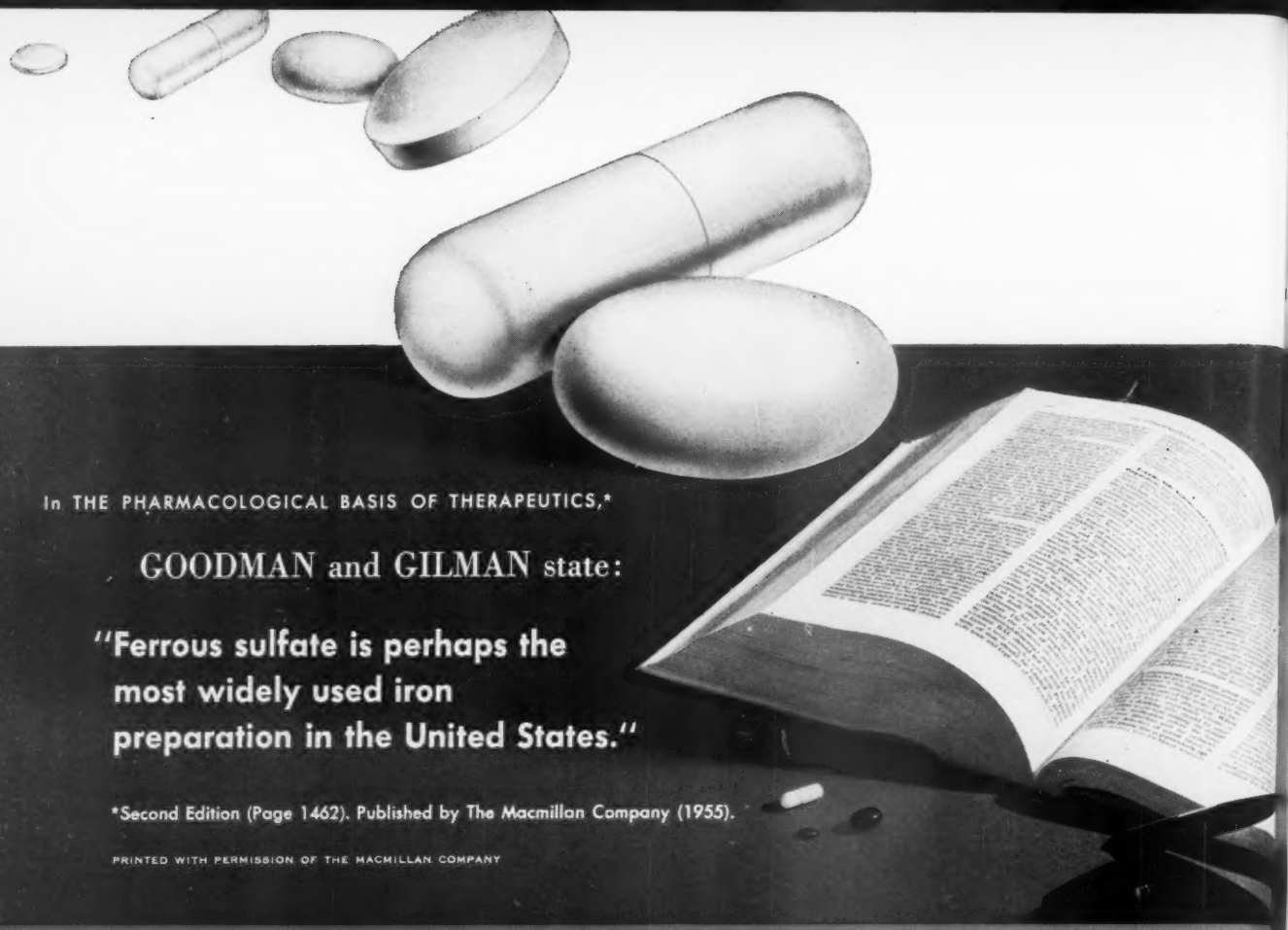

In THE PHARMACOLOGICAL BASIS OF THERAPEUTICS,*

GOODMAN and GILMAN state:

"Ferrous sulfate is perhaps the most widely used iron preparation in the United States."

*Second Edition (Page 1462). Published by The Macmillan Company (1955).

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Mallinckrodt Ferrous Sulfate

. . . MANUFACTURED TO MAKE FORMULATING EASY

Specially designed manufacturing equipment prevents air oxidation, closely regulates temperature and removes heavy metal impurities. This yields a uniform product with insignificant ferric iron content and good color. Ferrous Sulfate Exsiccated USP is a good example of this.

Through years of experience as one of the largest producers, Mallinckrodt has learned to manufacture ***iron salts*** of unsurpassed quality... Ferrous Sulfate USP, crystals and granular, as well as the exsiccated form.

FOR QUALITY IN YOUR FORMULATIONS

SPECIFY *Mallinckrodt*®

- FERROUS SULFATE
- BISMUTH COMPOUNDS
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Regulating MULTI-USE Drugs

An interesting situation in the distribution and labeling of drug products has arisen from the action of Bristol Laboratories in the case of its product phenyltoloxamine, which has for some years been sold over-the-counter as Bristamin, which is the dihydrogen citrate salt of the drug. Recent studies made with the drug indicate that it has very definite merit as a tranquilizer. Therefore, Bristol Laboratories have withdrawn the over-the-counter antihistamine product from the market, and are now distributing the drug under the new name of "PRN." Furthermore, for the present the drug will be distributed primarily for institutional use.

While Bristamin tablets were 25 milligrams, and were to be taken four times daily, institutional clinical studies indicated that dosages of a minimum of 100 milligrams, four times a day to a maximum of 600 milligrams, four times a day are used tor tranquilizing effects on mental patients. These studies were carried out by Dr. Anthony Sainz of the Research Department of Marcy State Hospital, a New York State Hospital. The study, covering some 275 cases of various types of serious mental illness, indicates that the drug is "not only safe but remarkably free from undesirable reactions" at the requisite dosages.

The interesting situation that arises from this action is not from the way in which Bristol Laboratories has acted, but from the possibility that some other drug producer might act otherwise, or that more than one producer might be engaged in selling the same thing for entirely different uses. Bristol Laboratories has chosen to follow the tranquilizer use to market this exclusive product and has wisely abandoned the over-the-counter sale of the product as an antihistamine. Naturally, when the product is generally offered for tranquilizer use, it will be restricted to physician's prescriptions. No longer will it have an over-the-counter status. This Bristol Laboratories can do because it controls the product. And doubtless Bristol foresees a much larger and more profitable market for the drug as a tranquilizer than as an antihistamine. Furthermore, antihistamines have pretty much had their day and have settled down to several well-known and rather widely-used products, while tranquilizers are still most important and still in a state of flux. It appears that the ideal tranquilizer has not as yet been discovered. Furthermore, the tranquilizers on the market vary in their action, side reactions, and other factors. And then, the more drugs the physician has available, the better off he is.

The marketing of a product for uses that involve over-the-counter sale in one dosage and for prescription sale in another dosage would naturally raise a real problem for the Food and Drug Administration. No one has as yet been able to answer the question of how long does a "new drug" under FDA regulations remain a new drug? Under such circumstances it is more than likely that the FDA would take some sort of action, for the Administration in its regulations construes changes in conditions of use as a drug as an untrue statement of a material fact in the original application. Therefore, if the drug in question is still regarded as a "new drug" by the FDA, then a supplemental application, indicating the proposed changes to be made, must be filed. Naturally, the use of such a product for an entirely different use would require submission of proof by reports of clinical research conducted in the new use.

The Food and Drug Administration is doubtless well aware of the problem that might arise due to actions that might be taken by drug manufacturers in adapting certain products to new uses. Antihistamines have always had a record of being soporific, or sleep-inducing, in character. And, in fact, certain of the antihistamines that have been approved for over-the-counter sale, and which are sold in bulk by chemical manufacturers, have been marketed by some companies as non-barbiturate sleeping tablets. In such cases, it is likely that the FDA would not object. They would certainly rather see such products used in the place of barbiturates from the safety angle. And furthermore, they would rather that people would use antihistamines as they are going to bed than during the day when the soporific activity of these products might prove dangerous.

There is no clear-cut answer to what action the FDA would take in the case of one manufacturer

(Continued on page 110)

COSMETICS 1956

While the sales of perfumes, cosmetics, and other toilet preparations, excluding toilet soaps, for 1956, as estimated by the Toilet Goods Association, registered an in crease of 10.8 per cent over sales for 1955, sales of taxable cosmetics for 1956 registered a gain of 14.3 per cent over sales for 1955. The TGA estimate of sales for 1956 was given as $1,321,000,000 for 1956, compared with $1,192,200,000 for 1955. Sales of taxable perfumes, cosmetics, and other toilet preparations for 1956 totaled $913,910,000, compared with sales of $799,270,000 for 1955.

Therefore the gain in sales of taxable cosmetics was greater than in the categories of products which are not taxable. Non-taxable items include tooth pastes and dental powders, and dentifrices generally; antiseptics; baby oils, powders, creams, and powders; shampoos containing more than five per cent of saponaceous matter and sold for cleansing; dandruff removers and remedies; shaving creams, soap, powder and aerosol; electric shaving preparations serving the same functional purpose as a lather or brushless shaving cream, but not astringents or after-shaves; foot creams, balms, powders for tired, aching, burning feet, but not deodorants or antiperspirants; grease paints and theatrical make-up; all cosmetics used by operators in beauty and barber shops.

The figures arrived at for non-taxable cosmetics—by subtracting the figure for taxable cosmetics from the TGA estimate—stand at $381,100,000 for 1956, compared with $392,930,000 for 1955. This is a decrease of $11,830,000, or 3.0 per cent. However, the TGA estimate claims that dentifrices, which normally show an annual gain of five per cent, showed an increase of 10.5 per cent during 1956. TGA also estimates that shaving preparations registered a gain of about 9 per cent with aerosol products accounting for by far the greater portion of this gain.

With respect to some of the classes of taxable cosmetics, TGA reported that "Business in make-up items showed a gain of more than 14 per cent, due principally to the impact of heavy promotion by leading companies in the field. The increase in hair preparations as a general class was less than during the last two or three years but was still a substantial 12.5 per cent. Sales of deodorants increased by nearly 20 per cent with the male market predominating in the rate of increase.

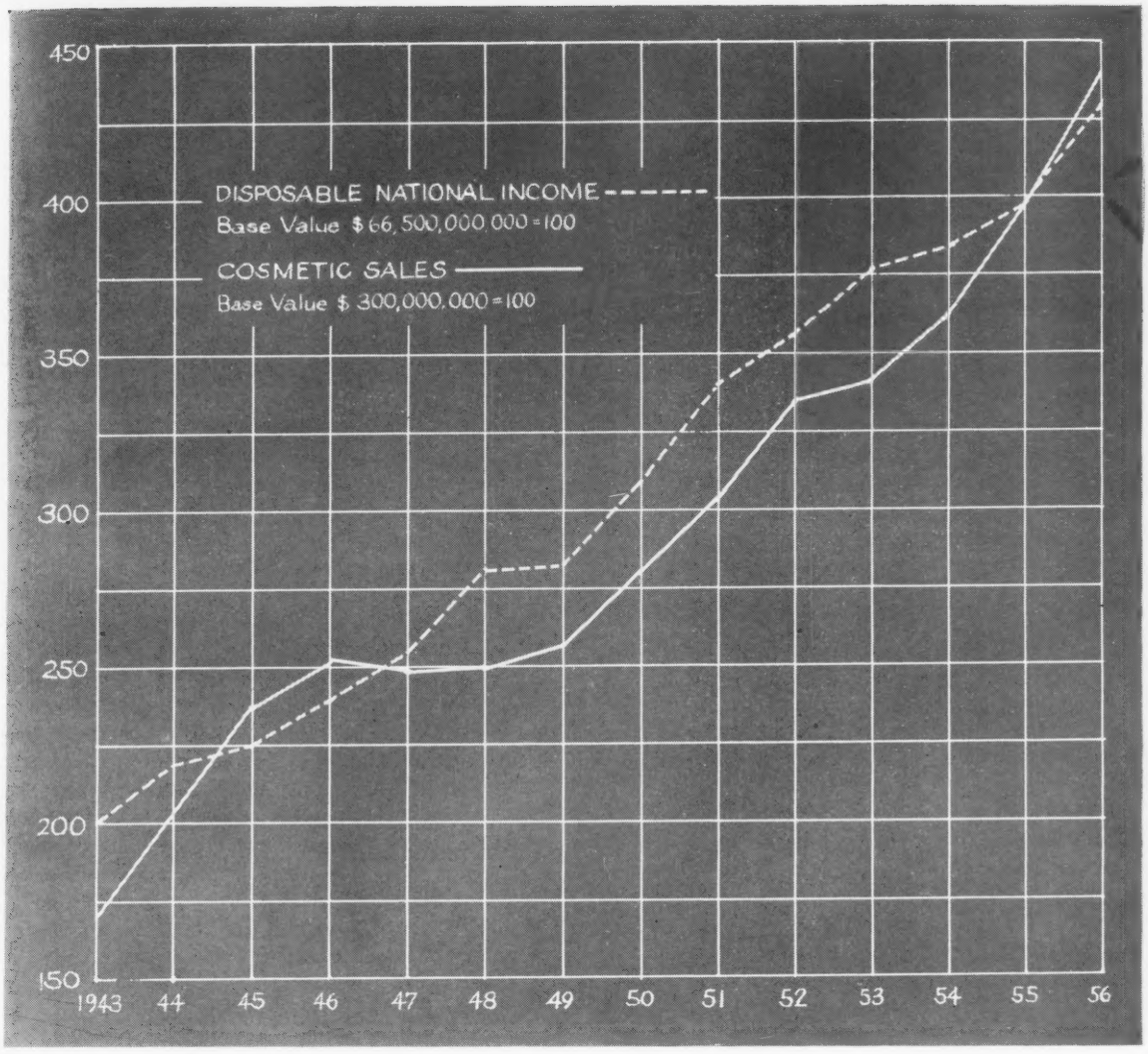
"Fragrance products as a whole lagged but did show a slight increase over 1955, all of which, however, was due to increased sales in colognes and toilet waters. Some individual houses showed a fairly sharp gain in perfume sales approximating the 10 per cent shown by the industry as a whole but this pattern was very irregular and a considerable number of houses lagged far behind."

Percentages of sales by the various types of outlets for the past seven years as estimated by the TGA are given in the following table.

	Chain & Independent Drug Stores	Dept. Stores & Specialty Shops	Food Stores	House-to-House	Ltd. Price Variety Stores	All Other Outlets
1950	37.0%	27.0%	6.1%	14.0%	11.0%	4.9%
1951	36.0%	25.5%	8.5%	16.2%	10.0%	3.8%
1952	34.5%	22.0%	14.0%	17.5%	8.5%	3.5%
1953	32.0%	22.1%	15.5%	18.3%	8.4%	3.7%
1954	30.2%	22.5%	17.1%	19.4%	7.5%	3.3%
1955	29.4%	22.3%	17.9%	20.0%	7.3%	3.1%
1956	29.3%	21.6%	19.1%	19.6%	7.2%	3.2%

The TGA gives estimates of total sales for the years 1914 to 1956 as follows:

YEAR	Sales in Millions of Dollars	YEAR	Sales in Millions of Dollars
1914	39.8	1935	322.1
1915	45.0	1936	336.5
1916	71.5	1937	374.0
1917	95.4	1938	412.3
1918	103.7	1939	425.1
1919	116.5	1940	449.9
1920	129.5	1941	463.6
1921	126.0	1942	481.4
1922	147.3	1943	507.5
1923	194.6	1944	593.0
1924	220.3	1945	711.3
1925	256.4	1946	758.2
1926	300.2	1947	743.8
1927	329.7	1948	749.8
1928	355.2	1949	770.8
1929	378.4	1950	840.1
1930	336.2	1951	912.8
1931	297.1	1952	1,004.0
1932	288.4	1953	1,020.8
1933	300.3	1954	1,086.8
1934	324.4	1955	1,192.2
		1956	1,321.0



As to the sales of the products of the industry through various types of retail outlets, TGA said:

"Every type of outlet showed some gain in total sales but the gain in several categories was below the overall percentage of increase; in fact, only one classification of store showed an increase substantially above the national average and that was the food stores whose percentage moved up 19.1 per cent of the total, or an increase of 18.5 per cent above 1955.

"Independent and chain drug stores still lead as the largest outlets, but their percentage declined slightly to 29.3 per cent."

Sales of taxable cosmetics by quarters for 1956 were:

1st Quarter (Jan., Feb., March)	$201,050,000
2nd Quarter (April, May, June)	209,480,000
3rd Quarter (July, August, Sept.)	212,960,000
4th Quarter (Oct., Nov., Dec.)	290,042,000

Percentages of collection of retail cosmetic taxes by areas and states is approximately as follows:

NEW ENGLAND	
Maine	0.33
New Hampshire	0.17
Vermont	0.09
Massachusetts	2.12
Rhode Island	0.37
Connecticut	0.91
MIDDLE ATLANTIC	
New York	24.6
New Jersey	1.9
Pennsylvania	4.2
SOUTH ATLANTIC	
Delaware	0.14
Maryland	1.14
District of Columbia	1.26
Virginia	1.32
West Virginia	0.71
North Carolina	1.15
South Carolina	0.51
Georgia	1.63
Florida	1.35
EAST NORTH CENTRAL	
Ohio	4.8
Indiana	2.1
Illinois	7.3
Michigan	5.4
Wisconsin	1.2
EAST SOUTH CENTRAL	
Kentucky	0.71
Tennessee	1.32
Alabama	0.90
Mississippi	0.51
WEST NORTH CENTRAL	
Minnesota	1.71
Iowa	1.05
Missouri	3.0
North Dakota	0.22
South Dakota	0.22
Nebraska	0.68
Kansas	0.91
WEST SOUTH CENTRAL	
Arkansas	0.61
Louisiana	1.13
Oklahoma	1.26
Texas	4.20
MOUNTAIN	
Montana	0.24
Idaho	0.39
Wyoming	0.14
Colorado	0.99
New Mexico	0.28
Arizona	0.36
Utah	0.39
Nevada	0.13
PACIFIC	
Washington	1.58
Oregon	1.14
California	10.80

Courtesy Tussy Cosmetiques

Deodorants and Antiperspirants*

PART I by Emil G. Klarmann, Sc.D., D.Sc.(h.c.)

VICE-PRESIDENT AND MANAGER OF TECHNICAL SERVICES, LEHN & FINK, INC., NEW YORK, N. Y.

Some Anatomical and Physiological Background Data

In popular usage the terms perspiration and sweating are synonymous. However, in scientific language one has to distinguish between "insensible" and "sensible" perspiration, on both functional and anatomical grounds. In its widest sense, insensible perspiration covers the loss of water in the form of vapor through both the skin and the respiratory passages, plus the weight of carbon dioxide produced by the lungs as well as that given off by the skin. (The loss of carbon dioxide through the skin is less than one per cent of that exhaled by the lungs and, therefore, not so important in the overall picture.) However, for practical purposes, insensible perspiration is understood to indicate the discharge of water in the form of vapor through the skin only; such perspiration is also invisible and intangible, but it is weighable. Cutaneous insensible perspiration is presumed to operate particularly by diffusion of the tissue fluid through the epidermis. Its rate is fairly uniform over the entire skin area, except for the palms and soles where it is considerably greater.

From the point of view of the subject of this presentation, our primary interest resides in the sensible perspiration or sweating which means the elimination of water through the activity of the sweat glands and ducts. The most important function of sensible perspiration is its participation in the regulation of body temperature. In addition, it plays an important

*Presented at the Cosmetic Chemistry Seminar, St. John's University College of Pharmacy, Brooklyn, N. Y., April 16, 1957.

role in the elimination of lactic acid formed during muscular exercise. The activity of the sweat glands of the palms and soles contributes to their efficiency by protecting these skin areas against dryness, and thus by enhancing the "grasping" effect in the handling of objects, as well as in walking.

The sweat glands are subdivided into eccrine and apocrine; the former secrete a practically clear fluid, whereas the secretion of the latter is cloudy and opalescent.[1,2]

According to the estimates of Krause,[3] and those of Taniguchi and Kamiyama,[4] the human body contains some two million sweat glands. Of these, the eccrine glands are distributed all over the body except on the lip margins and certain portions of the sex organs; they are especially numerous on the palms and soles, also on the head. The apocrine glands occur particularly under the arms (also in the pectoral, abdominal and genital areas); they actually represent secondary sex characteristics, and they are more numerous in the female than in the male. The apocrine glands secrete nitrogenous and fatty matter in addition to salt and water which constitute the bulk of the eccrine secretion.

Anatomically the eccrine sweat gland consists of a body and an excretory duct, the latter extending directly to the skin's surface, often in spiral fashion and reaching it with a funnel-like opening. By contrast, the apocrine gland is larger in size, and its duct usually opens into a hair follicle rather than onto the skin surface.

The secretion of sweat is controlled by the nervous system. Eccrine sweating is a cholinergic process, i.e., the impulses are transmitted by acetylcholine at the nerve endings acting on the sweat glands. Apocrine sweating is assumed to be adrenergic in character although the possibility of cholinergic participation has not been eliminated.[5,6]

Output of Perspiration

The figures reported for the output of normal insensible perspiration vary from 1 to 3 pounds for a 24 hour period.[7] The output of sensible perspiration depends upon a number of factors such as temperature, humidity, exercise, emotional and mental stress, etc. In the case of strenuous physical activity, its output *per hour* may be as much as two to four pounds.

The distribution of the "perspiration potential" over the surface of the body may be demonstrated by means of colorimetric methods. One such method calls for the application of a dilute alcoholic iodine solution followed by dusting with starch after drying. The pattern and intensity of the secretion of moisture is the result of the typical iodine-starch color reaction. Another method depends upon the reaction of the ferric ion with tannic acid.[8] It calls for the application of a diluted alcoholic tincture of ferric chloride to the skin, followed by spraying with powdered tannic acid after drying. As perspiration begins to function, the reaction between iron and tannic acid takes place causing the appearance of dark spots which allow visualizing each individual sweat gland.

Composition of Perspiration

Perspiration contains both inorganic and organic matter. The ratio of the organic to the inorganic content of sweat residue is approximately 1:3.

The pH of eccrine perspiration varies usually from 4.0 to 6.8.[9] In the axillary area the pH of sweat ranges around 7, particularly because of the higher ammonia content of apocrine secretion. Where there is an opportunity for intertrigo and maceration, the pH of perspiration has been known to rise to 8 or higher.

Following is a typical composition of normal perspiration:[10]

Water	99.0200 per cent
Propionic acid	0.0062
Acetic acid	0.0096
Caprylic, caproic acids	0.0046
Sodium chloride	0.7000
Lactic acid	0.1000
Citric acid	0.0400
Ascorbic acid	0.0400
Urea	Trace
Uric acid	Trace

The concentration of the individual components varies, sometimes within an appreciable range. Thus, in mild sweating, the excretion of sodium chloride in 24 hours represents only 3 to 5 percent of the total excretion, while in the case of intensive sweating, as much as 30 percent of salt may be eliminated in this manner.

Eccrine sweat contains also salts of the following metals in trace quantities: potassium, calcium, magnesium, iron, copper and manganese. As to the inorganic anionic portion, the following occur in addition to the chloride: carbonate, phosphate, sulfide, iodide, bromide and fluoride. Of the organic acids,

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KOBOLD
a Hemo-Goblin

by Herbert M. Gross Ph.D.
PHARMACEUTICAL RESEARCH DIVISION, ABBOTT LABORATORIES

Cobalt, an impurity in iron ore, derived its name from the German "Kobold" or goblin. In the eighteenth century German miners, superstitiously reflecting limited knowledge, claimed the kobolds which inhabited their mines caused the extraction problems with ores.[1] Today, "the limited state of knowledge concerning the use of cobalt as a hematopoietic"[2] is evidenced by the unresolved diversities of opinion regarding the usefulness and toxicity of this drug and once again recondite activity has been attributed to the element.

Current interest in the use and evaluation of cobalt in therapy has been highlighted by the recent F. D. A. clarification statements[2,3] regarding cobalt administration for the treatment of anemias. Products including more than 2.5 mg. per dose of cobalt in the form of any of its salts are limited to prescription sales and are considered new drugs limited to investigational use until a new drug application has been approved. Cobalt products must carry warning labeling regarding the requirement that iron co-therapy should be instituted to obtain maximum results, possible toxic or adverse effects, and that the effects of prolonged administration of cobalt are not fully known. Products containing cobalt in dosage less than 2.5 mg. per day may be sold without prescription providing 100 mg. of assimilable iron are provided for every 10 mg. of cobalt recommended per 24 hour interval.[4] These products are required to carry labeling regarding excessive dosage, administration to children, and a 3 month limitation for use without physician consultation. Such requirements have been established as precautionary measures because of the present diversity of scientific opinion concerning cobalt as a hematopoietic agent. For the past 10 years, cobalt salts have been administered as adjuncts to other anti-anemia drugs especially in the treatment of chronic, refractory cases. Marked differences of medical opinion exist regarding the utility and toxicity of cobalt in hematologic disorders. It is the purpose of this discussion to bring together some of the viewpoints and scientific data on the subject.

A cursory survey of cobalt-containing pharmaceutical products indicated over 45 items classed as blood modifiers or as trace mineral supplements.[5] The most widely used salt is cobaltous chloride. Cobalt gluconate is also used and is purported to cause less gastric upset than the chloride. Other cobalt compounds have been reported in the literature including a cobalt-amino acid complex,[6] cobalt chlorophyllin,[7] and cobalt oleate.[8] A study of cobaltic compounds versus cobaltous compounds indicated that their pharmacologic activity was comparable.[9] This study utilized hexamine cobaltic nicotinate. The use of potassium cobaltinitrite in the treatment of asthma and dyspnea has been noted.[10] Cobalt oxide has been employed to treat rheumatism and as an emetic.[11] At one time cobalt antidoted cyanide poisoning,[11] but to be effective it was necessary to employ dosages which were not without danger and the practice has been discontinued in man. At this point it may be well to mention the high cobalt content of vitamin B_{12}, cyanocobalamin, and classify it as a cobalt complex.

Pharmacodynamics

Investigators have reported experimental synergistic effects contributed to other medicinals by cobalt. Cobalt induced a two- to four-fold increase in effectiveness of penicillin.[12,13,14] The co-administration of cobalt with streptomycin allowed this microbiotic to function against streptomycin-resistant tubercular bacilli.[15] The bacteriostatic effect of sulfi-

soxazole and streptomycin was increased in the presence of cobalt.[13] The cobalt chelate of streptomycin was found to provide more prolonged blood levels than the sulfate.[16] A combination of cobalt, bacitracin, and tyrothricin had greater activity against *S. aureus* and *E. coli* than each alone or associates of any two.[17] A therapeutically useful complex of cobalt and aureomycin has been patented.[18] Another patent[19] described a cobalt complex with a hydrazide which has greater antitubercular activity than the hydrazide alone. The enhancement of action of sulfa drugs and antibiotics for medicinals used in mastitis has been made the subject of a patent.[20] Cobalt chelated EDTA exhibited antiviral action on influenza virus.[21]

As a background for discussion concerning the rationale of treatments utilizing cobalt, some pharmacologic aspects of this drug are presented. Sollman[22] classified cobalt as an indispensable element. Animals fed a cobalt-free diet died in 3 weeks.[23] No case of actual cobalt deficiency has been reported in man, but such deficiencies have been noted and studied in animals. Human foodstuffs from different sources throughout the U. S. contain 0.005 to 0.057 mg. cobalt per 100 grams of dry substance[24] and presumably satisfy the cobalt requirements of the normal body. A normal adult consumes 5-8 mcg. cobalt per day. About 77 per cent is absorbed and about 67 per cent is excreted in urine. From the normal diet it is possible to maintain a positive value of 5 mcg. per day. A dietary deficiency results in anemia.[25]

Cobalt is absorbed in the cobaltous form from the gastro-intestinal tract. Rectal absorption is rapid and comparable to intravenous administration.[26] Intramuscular, intraperitoneal, and subcutaneous parenteral administration of soluble cobalt salts result in rapid absorption[26] while the complexes are less available.[27] Studies utilizing radioactive cobalt indicated cobalt spreads rapidly throughout the extracellular fluid and that the cellular constituents of blood absorb only very small amounts.[28] Cobalt has been found in the blood of normal humans[27] but no regulatory serum level mechanism has been described. Earlier reports of the lack of cobalt in serum of normal humans[29] were probably clouded by ineffective methods of determination. Increased cobalt serum levels resulted from injection of cobalt, but these levels drop quite markedly within a few hours.[26]

Excretion of cobalt after oral and parenteral administration is fairly rapid—the major portion being eliminated in the urine within 24 hours.[30] Notable amounts of cobalt are also excreted in bile and feces.[29] Some cobalt is found in all tissue of normal, non-cobalt-treated humans,[31,32,33] but the liver appears to be the chief organ for the accumulation of this metal.[34,35,36] Minute quantities of cobalt have been demonstrated in the fetus of pregnant cows after cobalt administration.[35] Massive cobalt dosage in the rat resulted in saturation levels in the liver, kidney, and lungs.[37] At these high levels, however, only a very slow increase in cobalt content of spleen and bone marrow was reported. In light of the route of excretion and sight of accumulation of this element, cautions should be made concerning the administration of cobalt to patients with extensive parenchymal damage in kidney or liver, in glomerulonephritis or hepatocellular disease.

Diverse pharmacodynamic activities have been reported for cobalt. While the hematologic effects are of immediate interest, other activities are also noteworthy and may enter into consideration on this

(Continued on page 113)

ETHANOLAMINES in Topical Preparations*

by J. H. Draize, F. X. Wazeter, E. A. Kelley, and R. E. Zwickey

DIVISION OF PHARMACOLOGY, BUREAU OF BIOLOGICAL AND PHYSICAL SCIENCES, FOOD AND DRUG ADMINISTRATION, WASHINGTON 25, D. C.

Within recent years the ethanolamines have found use in cosmetic and topical drug preparations on an increasingly greater scale. Although they are employed primarily as alkanolamine soaps for their emulsifying properties, they also may serve as substitutes for the more volatile base, ammonium hydroxide, in thioglycolate hair waving lotions.

During the past year, however, the question of possible kidney damage, following the use of the monoethanolamine salt, has been raised with the Food and Drug Administration. The purpose of the present investigation was to demonstrate the toxic effects, if any, of the ethanolamines, in both free and combined form, when incorporated in cosmetic and topical drug preparations.

Methods

The subacute (multiple exposure) dermal toxicity of mono-, di-, and triethanolamine (MEA, DEA and TEA, respectively) was studied in the rabbit, according to the methods used by Lehman et al. (1955). These compounds were tested individually, as the free amines at concentrations of 2 and 5 per cent, in aqueous solution. In addition, mono- and triethanolamine were tested, at a 5 per cent concentration, in USP hydrophilic and white ointment bases on intact and abraded skin. In similar studies, thioglycolic acid, at a 6.25 per cent concentration in water, was adjusted to pH 9.2 with either monoethanolamine or ammonium hydroxide prior to inunction. The usual 20-day subacute dermal toxicity study was extended to cover a 6-week period.

In addition, mono- and triethanolamine were administered, full strength, or diluted, or neutralized with HCl, for periods ranging from 1 to 12 days, by the oral route, at daily dose levels varying from 0.5 gm. to 2.0 gm. per kg. body weight.

Body weights, food intake and gross local effects were recorded daily for all animals. Urines were examined periodically during the course of these experiments for the presence of protein and reducing sugar. In addition, urines of rabbits treated with the thioglycolates were tested for the presence of thioglycolate. Complete blood counts were determined 3 times for rabbits on the 90-day subacute dermal toxicity studies.

Histopathological examination of the highest dose level animals inuncted with the aqueous preparations routinely included hematoxylin-eosin stained paraffin sections of formalin-fixed lung, heart, liver, gall bladder, spleen, pancreas, small intestine, kidney, adrenal, lymph node, thyroid, testis and prostate (or ovary and uterus), urinary bladder, voluntary muscle, bone marrow, skin and brain; parathyroid and stomach often were included. In addition, Oil Red O stained frozen sections of liver and kidney, and Wright-Giemsa stained bone marrow smears, were included. Microscopic sections were made of 73 of

TABLE I

EFFECT OF MONO-, DI-, AND TRIETHANOLAMINE

DERMAL STUDIES

PERCENT CONCN IN WATER	DAILY DOSAGE ML/KG	NUMBER OF DOSES	SKIN LESIONS (GROSS)	MORTALITY RATIO PER AMINE
2	4	5	NONE	0/2
5	4	15	SLIGHT (MEA)	0/2
	2	15	NONE	0/2
	1	15	NONE	0/2
2	4	65	NONE	1/3 (MEA)
	2	65	NONE	0/3
	1	65	NONE	0/3
	0.5	65	NONE	0/3

TABLE II

EFFECT OF 5% MONO- AND TRIETHANOLAMINE IN USP HYDROPHILIC AND WHITE OINTMENT BASES

DAILY DOSE GM/KG	NUMBER OF DOSES	CONDITION OF SKIN	SKIN LESIONS (GROSS)	MORTALITY RATIO PER AMINE
1	15	ABRADED	NONE	0/3
1	65	INTACT	NONE	0/3
0.5	65	INTACT	NONE	0/3

*From proceedings of the Scientific Section of the Toilet Goods Association, No. 27, May, 1957.

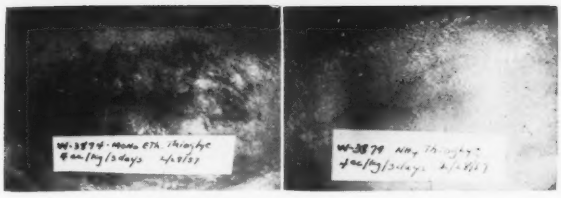

Figure 1a Figure 1b
Local skin effects following topical application of momoethanolamine thioglycolate and ammonium thioglycolate.

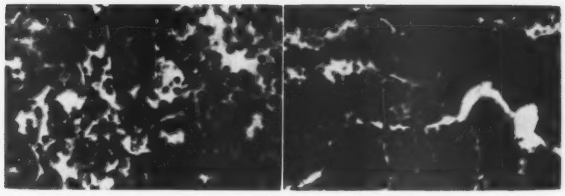

Figure 2a Figure 2b
Deposition of fat in kidney tubular epithelium as demonstrated with Oil Red O stain.

TABLE III

EFFECT OF MONO- AND TRIETHANOLAMINE ORAL STUDIES IN THE RABBIT

	PERCENT CONCN	DOSE GM/KG	NO. OF DOSES	MORTALITY RATIO
MEA	10	0.5	12	0/2
TEA	10	0.5	12	0/2
MEA	100	1	3	0/1
	100	2	1	1/1
TEA	100	1	3	0/1
	100	2	3	0/1
$MEA_{(NEU)}$	100	1	4	0/2
	100	2	4	2/2
$TEA_{(NEU)}$	100	2	8	0/2

the rabbits used in the experiment; 18 were sectioned in detail as described, and the remaining 55 sectioned animals (those with shorter exposure, lower dosage levels, and ointment inunctions) were given a less detailed examination.

Results

Results (Table 1) obtained by dermal application, to rabbits with intact skin, of 2 and 5 per cent aqueous solutions of mono-, di-, and triethanolamine indicate that no gross local or systemic effects occur in the various experimental groups with the exception of those animals which developed a slight dermatitis following treatment with 5 per cent monoethanolamine at a daily dose level of 4.0 ml. per kg. Death of one animal, in the monoethanolamine group treated with the 2 per cent solution, resulted from causes other than those associated with the experiment.

TABLE IV

DERMAL TOXICITY OF 6.25% THIOGLYCOLIC ACID ADJUSTED TO pH 9.2

	DOSE ML/KG	NO. OF DOSES	SKIN LESIONS	MORTALITY RATIO
MEA				
	4	3 4,8	SEVERE	3/3
	2	29	MODERATE	0/3
	1	29	SLIGHT	0/3
	0.5	29	VERY SLIGHT	0/3
NH_4OH				
	4	5, 5, 29	VERY SLIGHT	2/3
	2	29	VERY SLIGHT	0/3
	1	29	VERY SLIGHT	0/3
	0.5	29	GROSSLY NORMAL	0/3

Data are presented in Table 2 on the effects of daily dermal application of 5 per cent mono- and triethanolamine, as the free amines, incorporated in USP hydrophilic and white ointment bases. The abraded skin studies consisted of 15 applications for the 20-day subacute study, whereas the intact skin studies consisted of 65 applications conducted during a 90-day period. As in the above animals, no gross local or systemic effects, attributable to treatment, were observed in the rabbits listed in Table 2, and histopathological examination of tissues was negative. Similarly, hematologic studies, conducted periodically during and at the termination of treatment, revealed no abnormal change in the blood pictures of these animals.

The oral studies were designed to afford information on possible systemic effects following ingestion, and to gain insight into the type of histopathology which might be expected from dermal application of these compounds. Mortality ratios, following administration of mono- and triethanolamine aqueous solutions by stomach tube, are listed in Table 3. None of the rabbits given 10 per cent solutions of the respective amines, at 0.5 gm. per kg. per day for 12 doses, showed any gross or microscopic pathological changes, or other evidence of toxicity. When these amines were administered, at concentrations of 100 per cent, death was observed only with monoethanolamine at the 2.0 gm. per kg. dosage level. Inspection of the gastrointestinal tract of this animal revealed severe acute inflammation. This acute effect was considered to be a function of pH alone. Therefore, the tissues of this animal were not examined. In order to compensate for this pH effect, the amines first were neutralized, to phenolphthalein, with HCl prior to administration. Both rabbits on the 2.0 gm. per kg. dose level of neutralized monoethanolamine died after 4 daily doses, thus indicating that pH alone was not the sole cause of death. Those on the same dose level of neutralized triethanolamine survived twice the number of daily doses. Autopsy and histopathological examination of these 2 rabbits revealed no changes, attributable to treatment, in the organs examined.

Dermal toxicity data are presented in Table 4 on the effect of repeated daily inunction, during a 6-week

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Measurements of Emolliency

by Herbert J. Spoor, Ph.D., M.D. ASSISTANT PROFESSOR OF DERMATOLOGY AND SYPHILOLOGY, NEW YORK MEDICAL COLLEGE.

The emollients of the skin are the oil and water emulsions which prevent its dryness and give it protection. The oils of these emollients may be supplied from within or applied from without. The makers of toiletry preparations are concerned with both types of oil, as also is the dermatologist. Actually, each recognizes the existence of three skin oil problems. First, there is that of the removal of excess skin oil. For this, one uses the emulsifying action of soaps and detergents and worries about the damage done by overcleaning. Secondly, there is the problem of replacement of skin oils. This, one attacks with lotions, creams and other toiletries. Thirdly, one must try to restore lost oil gland function and rejuvenate aged skin. Here, we depend upon the rather nebulous galaxy of "do something" enriched beauty creams, and upon their therapeutic counterpart, the vitamin and hormone containing topical preparations.

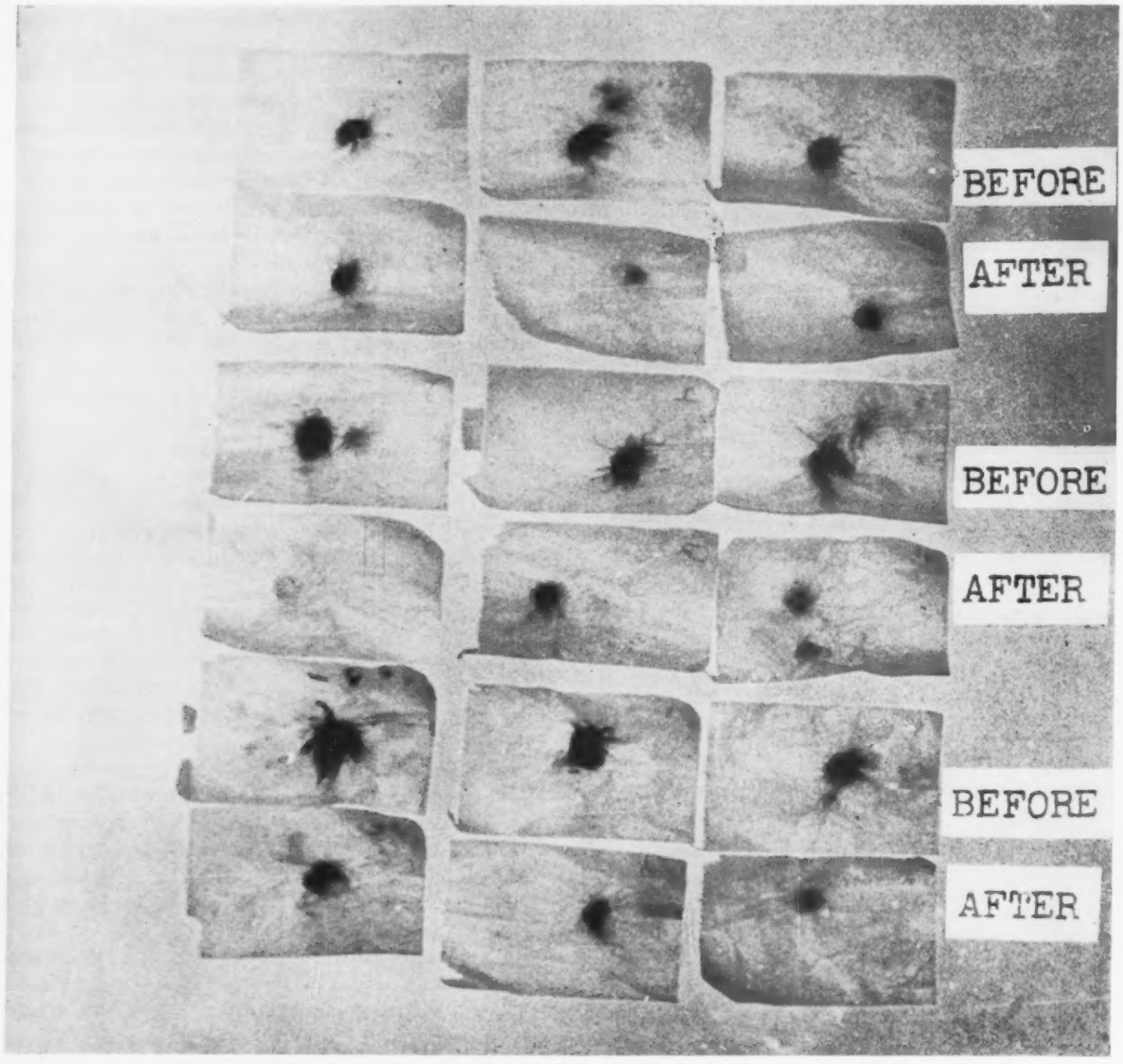


Figure 1—Lens Paper Sampling Natural Oil (Osmic Acid Stain) Before and After Soap and Water Cleansing

*From proceedings of Scientific Section of the Toilet Goods Association, No. 27, May 1957.

and Emollient Penetration*

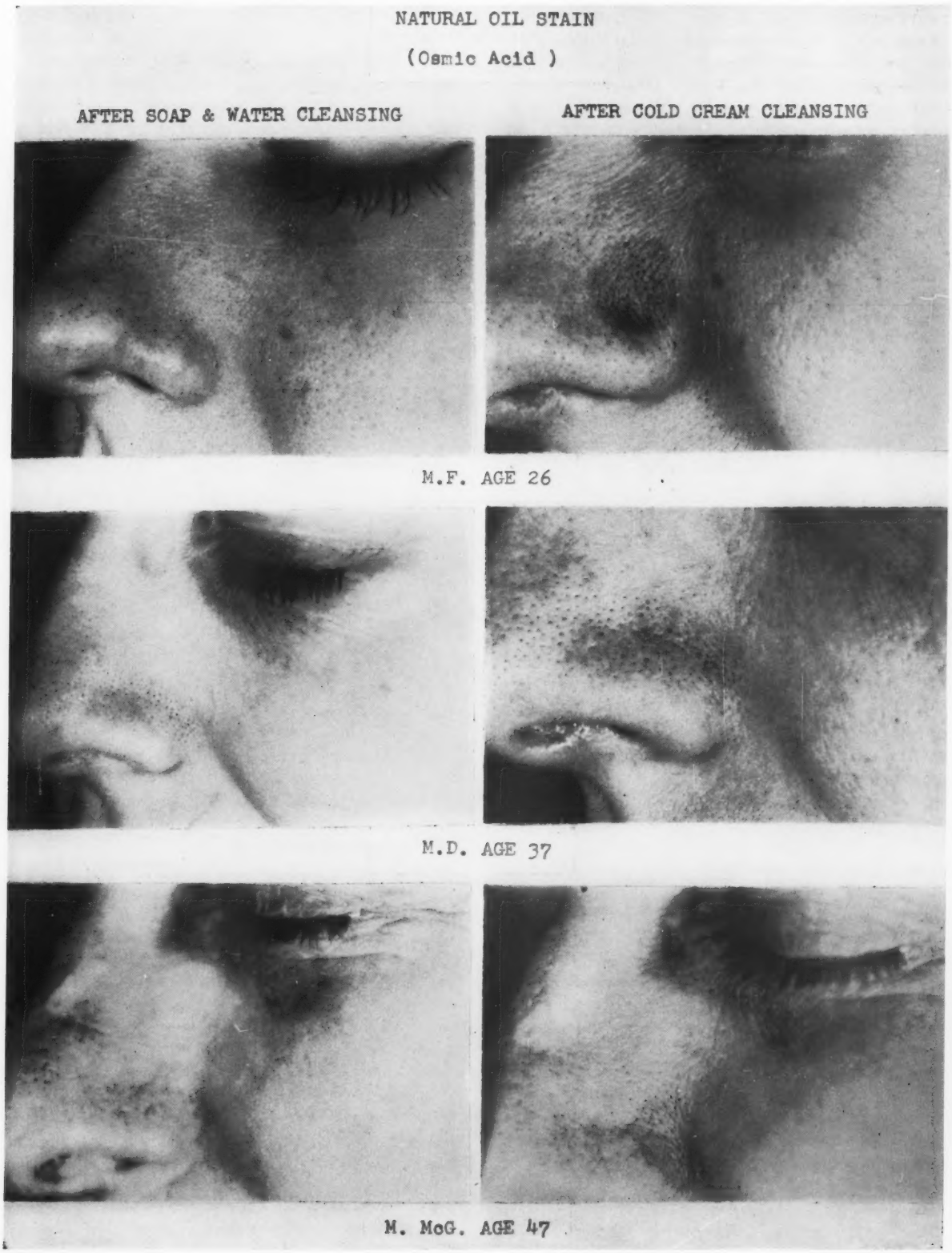


Figure 2

Technically, it has always been difficult to measure objectively how much oil was present on the skin. Therefore, evaluation of the oil status has depended largely upon the more subjective observations such as dry or oily skin, brittle or lank hair, course or fine appearance, and shriveled or smooth texture. Pore size and wrinkle depth have also served as a measure of emolliency. There has been a great deal of good work on various phases of the oil problem such as that on sebum dispersion[1] and the composition[2] and epidermal distribution of measurable emollient agents,[3] but the techniques used have been of a purely research character,[4] and have lacked the simplicity, speed of application and ease of interpretation that are essential for practical measurements of emolliency useful in the cosmetic field. We would like to know what types and what quantities of oils are present on the skin surface and within the epidermis, and how we achieve the benefits obtained by application of toiletry emollients. This paper presents a method designed to give practical measurements of the natural skin oils and demonstrates *in vivo* and *in vitro* studies to show skin oil distribution and the effects of various topical procedures.

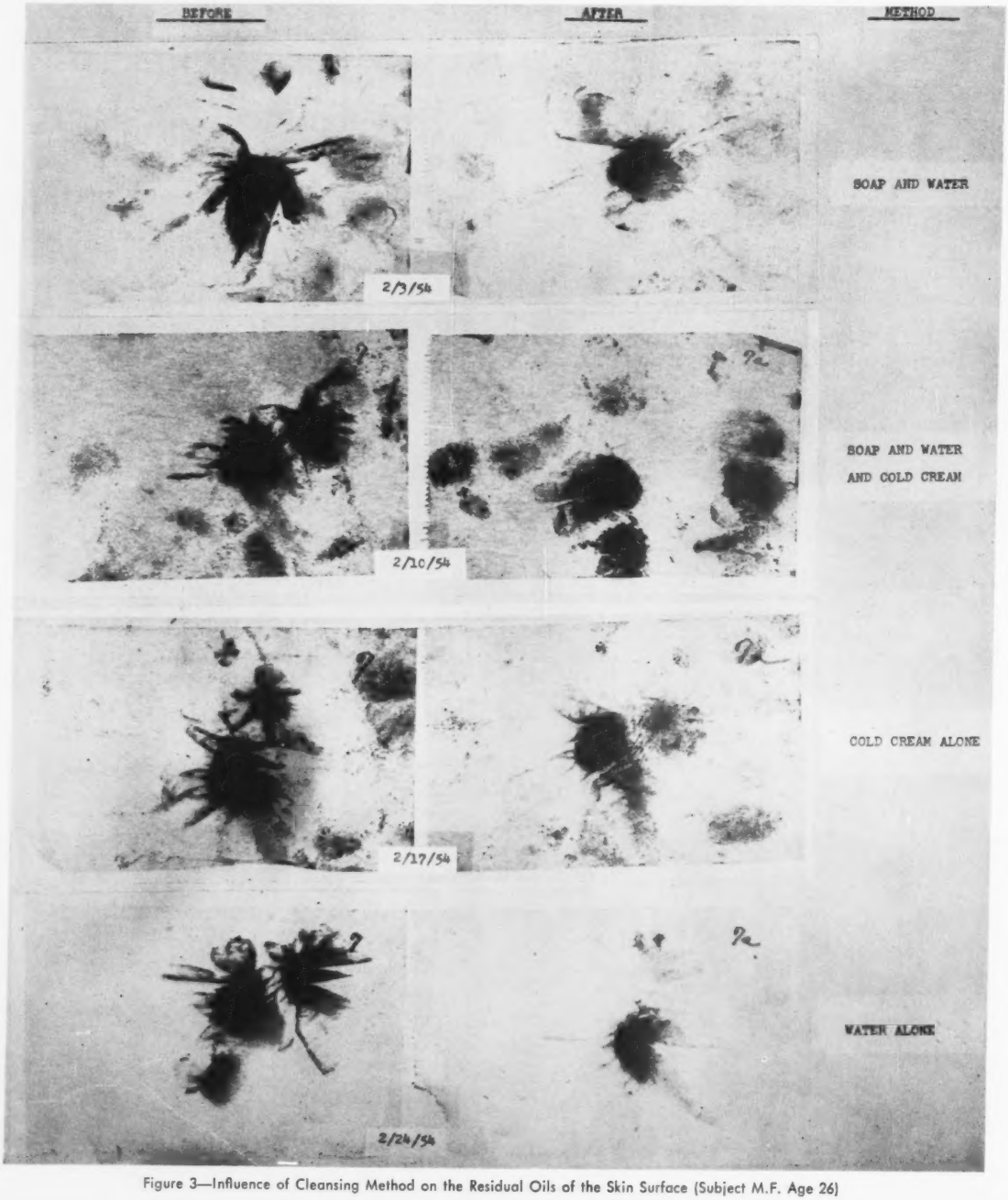


Figure 3—Influence of Cleansing Method on the Residual Oils of the Skin Surface (Subject M.F. Age 26)

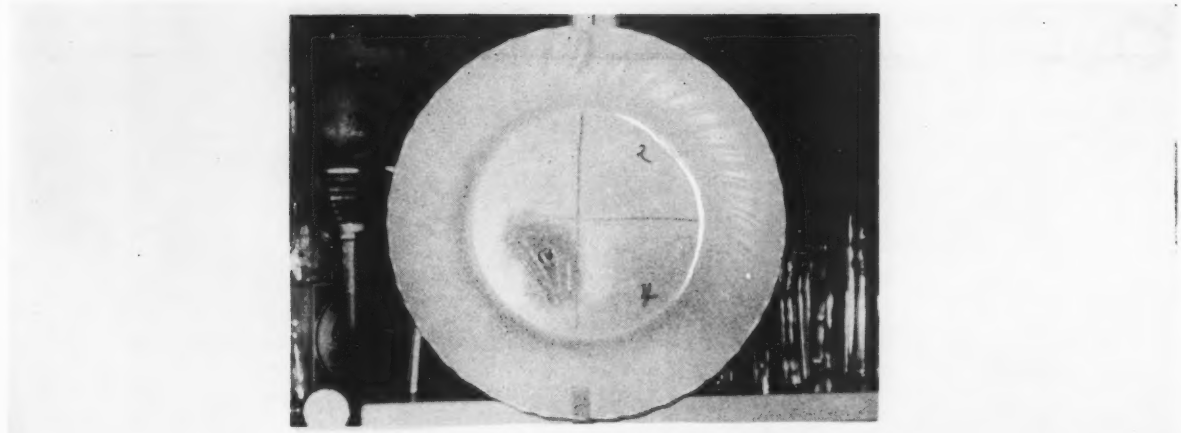
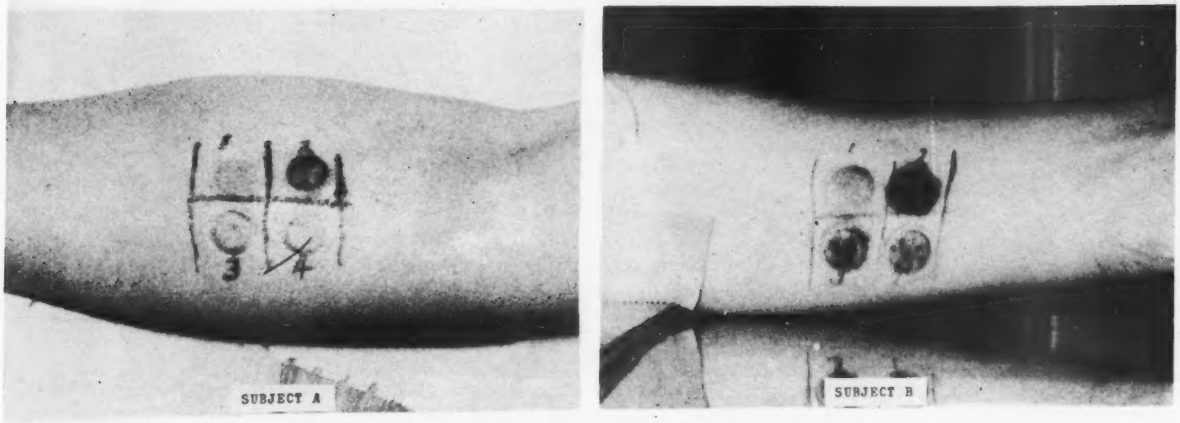


PLATE CONTROL



OSMIC ACID STAINING.

Figure 4

The entire method stems from an old and well-known chemical action of osmium tetroxide. This material stains, relatively specifically, the lipids, particularly the unsaturated ones. It was first used by Starke[5] in 1895 for histochemical demonstration of triolein and oleic acid. The chemical reactions are fairly straight forward. While oxidizing the ethylenic double bond, osmic acid is reduced to a black insoluble substance consisting of the lower oxide mixtures. Practically all natural fats contain stainable double bonds, therefore, osmic acid has become well established as a staining material for fixed fat in organs and deep tissue in both histological and pathological work. Osmium tetroxide is not absolutely specific for unsaturates, for given sufficient exposure time, some of the alcohols and conjugated lipids will also react. Nevertheless, its first and most complete reaction is with the ethylenic double bond. Since the lipids of sebaceous secretions consist of[6] 29 per cent free fatty acids (two-thirds unsaturated), 35 per cent combined fatty acids (glycerides, waxes, esters) and 32 per cent unsaponifiable matter, and the unsaturated elements are stained black on contact with either the vapor or a solution of osmic acid, sebaceous material in tissue has been demonstrated by this test.[7] However, as osmic acid is extremely caustic, its use has been largely limited to tissue studied *in vitro*. The vapor has been used previously in a few *in vivo* experiments. Unna probably originated the technique, but both Butcher's group[8] and Sulzberger's group[9] at New York University have made some experiments with direct skin staining. Their emphasis was primarily on oil contamination of sweat secretions, so the specific lipid staining properties of osmic acid were not fully utilized. In point of fact, osmic acid vapor does stain natural oil anywhere it may be; at the pore openings, within the epidermis, on the skin surface or even after its removal from the skin. Here, we are interested in applications of this staining power to the practical measurement of skin emollients. The applications include studies of skin cleansing and oil removal, restoration and replacement of oils, epidermal distribution and penetration and the stimulation of new oil production. This direct staining technique consists of a 30 second exposure of the skin area to the vapor from a 5 per cent aqueous solution of osmium tetroxide applied from the open mouth of a test tube. Longer

(*Continued on page 120*)

OUTLOOK in Pharmacy*

by W. Paul Briggs
EXECUTIVE DIRECTOR, AMERICAN FOUNDATION FOR PHARMACEUTICAL EDUCATION

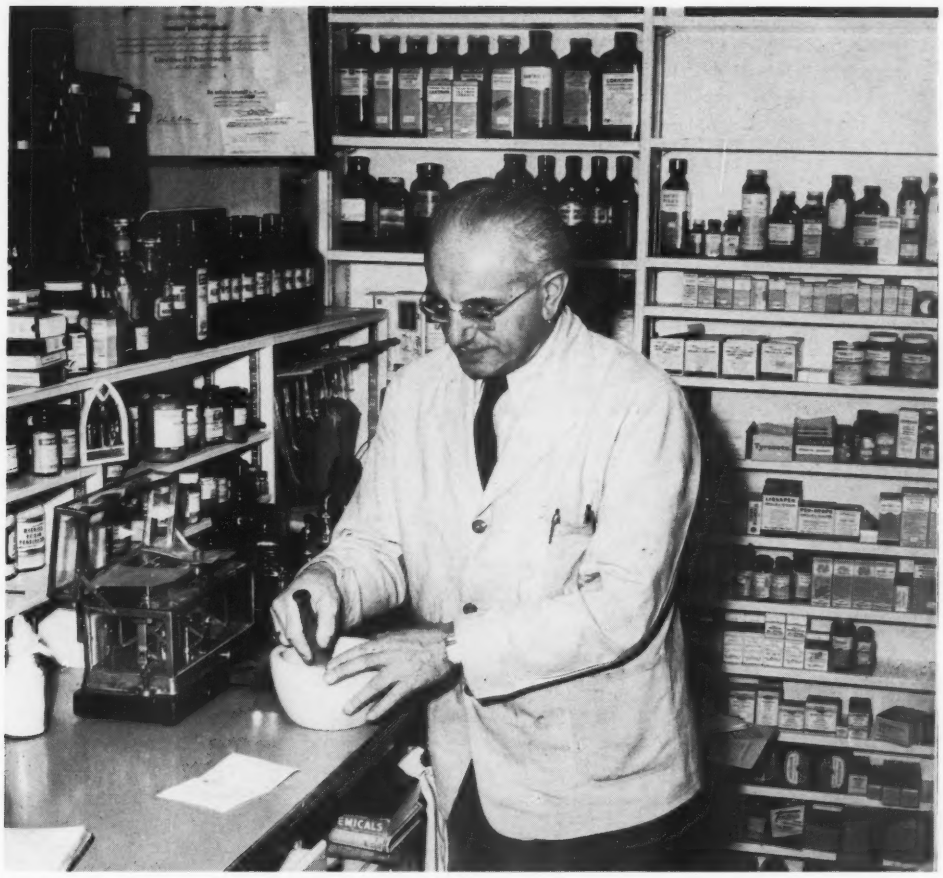
I assume my assignment to "review the entire area of pharmacy" is in the nature of a prologue. I believe we can dispense with historical reviews, and look toward our future horizons, by here citing only a few changes that have occurred on the pharmaceutical scene. These examples should serve to remind us of all the constants and variables that have shaped the course of pharmacy since the beginning of the 20th century.

Let's look at some of the changes, occurring over the past 50 years, that have profoundly influenced the way of pharmacy up to 1957:

1. Enactment of the 1906 Food and Drug Law; the new Food, Drug and Cosmetic Law of 1938 and Amendments; and the rise and decline of state "Fair Trade" laws.
2. Development of medicinal research leadership in the United States; introduction of dramatically effective therapeutic agents; and resulting growth of the pharmaceutical manufacturing industry with national distribution of prescription drugs.
3. Progress in pharmaceutical education from virtually no academic standard to progressively a 2-year; 3-year; and 4-year course; and a 5-year program of training projected for 1960; with parallel reduction of practical experience requirements.
4. Expansion of types of merchandise stocked in drug stores; use of self-service and intensive selling methods; television pre-selling of proprietary medicines and beauty aids; appearance and growth of professional pharmacies; chain drug stores; group medical practice; clinic and hospital pharmacies.
5. Increased ratio of prescriptions-per-physician-per-year from less than 1,000 in 1940, to over 2,000 in 1955; the climb of the prescription department's share of retail drug store sales from 11 per cent in 1940 to 27 per cent in 1956, with increases in average prescription prices from 89c in 1940 to $2.62 in 1956.

Each of you could easily list many different factors that have influenced the course of pharmacy over the last 50 years. But these 5 may serve to illustrate some of the basic causes of changes in pharmacy, and for our purposes here, eliminate the need for a full "review of the entire area of pharmacy." Since we are looking forward, no good purpose can be served by debating the specific causes and effects of these or other influences from the past. Now for the second part of my assignment—"discuss new horizons ahead in pharmacy." This is a far more difficult and dangerous task than merely picking a few random historical facts. I guess—and that is all I am qualified or mean to do—that between now and 2000 A.D. the pharmaceutical horizon will brighten, even though storm clouds will drift by occasionally. Within this guess of a bright future for pharmacy,—I predict:

*Inaugural Ceremony, Dr. Edward H. Litchfield, Chancellor, University of Pittsburgh, Pittsburgh, Pennsylvania, May 10, 1957.



DEVANEY PHOTO

1. Stabilization at about the present total of 52,000 drug stores, despite a population increase of well over 50 per cent; however, shopping center drug stores will increase four-fold to about 10,000 in the next 40 years; professional pharmacies will double in number to about 5,000; and the remaining 35,000 drug stores will serve city residential neighborhoods, small suburban centers, towns and rural areas.

Stabilization in total pharmacy outlets will result from a slowdown of mass population shifts, followed by rising concentrations within established living areas.

Also, skyrocketing of rental, labor and other overhead costs will require larger prescription and/or business volume per pharmacy to meet fixed expenses, favoring expansion of shopping center drug stores at the expense of smaller units.

Continued shrinkage of population in rural areas and small towns, will accelerate the trend toward "inter-town" medical and pharmaceutical services and general shopping.

Already the number of physicians in group practice, or on salary (in clinics and state institutions) is up from 1 out of 4 in 1935, to nearly 1 out of 2 physicians in 1955; and is expected to reach 3 out of 4 in 15 years. Patients have accepted "clinic practice," based on "how *long* to my doctor, *not* how far." These forces will result in further concentration of prescriptions and other pharmaceutical activities near the physician's point of service, rather than the patient's home.

2. A gratifying increase in position opportunities open to pharmacists resulting from improved scientific and business education; more specialization

within the profession; and that 25 per cent of all future graduates (double the present ratio) will be engaged in related professional, scientific, business, and technical fields, outside of retail pharmacy.

This drain-off from future graduating classes will certainly rise as a direct result of even better scientific and business training in our colleges. Many related, and even non-pharmaceutical activities will soon discover the sound and unique qualifications of pharmacists to fill a variety of positions previously reserved for chemists, biologists, business and management majors, and other narrowly specialized college graduates.

With the total number of prescription departments remaining at about 52,000, but distributed throughout three rather well-defined and basically different type outlets, pharmacy students will require more adaptive training in college to prepare them for the demands of (1) exclusive professional practice, (2) large store management, and (3) community service centers. All must first be competent as pharmacists, but, for each of these three different areas of practice, students will need special training to prepare them for the other demands and duties that will characterize these environments where pharmacy services will be provided for the public.

3. That from Junior High School on, all educational institutions will operate on an 11-month basis, thus shortening the total years necessary in preparation for life and career, but further taxing the staff and facilities of our colleges of pharmacy.
4. A marked increase in the number-of-prescriptions-per-person-per-year, especially in the childhood and "second childhood" age brackets, resulting from expanded drug research, new knowledge on degenerative diseases, and future medical attention on maintaining "wellness" rather than treatment of sickness.

With virtual conquest of infectious diseases, drug research is now turning toward the problems of chronic and degenerative diseases. Much progress has already been made, and in the near future we will have an imposing array of drugs to lesson the functional deterioration of wear and tear on the human machine.

Longevity and economics will continually force more elderly people into family-home care. With new, yet to be descovered drugs to retard their chronological deterioration, extend their years of usefulness, and control of illnesses of age, the total number of prescriptions to be provided by pharmacy in the next 10 years may easily exceed by 50 per cent the nearly 600 million dispensed last year.

Growing public interest in the prevention of sickness and disease, and widely read medical articles in the public press, will send more and more people to physicians for periodic checkups and preventive medications.

However, with prescription-dispensing-productivity-per-pharmacist steadily increasing, it seems unlikely that even this substantial increase in the total number of prescriptions will require any major increases, in either the number of prescription departments or number of practicing pharmacists.

5. Continuous, but not economically serious, diversion of some packaged medicines and traditional drug store merchandise to non-drug outlets, with parallel expansion of drug store professional services including; physical therapy appliances, hearing aids, Some nursing and invalid requisites, diagnostic aids, clinical laboratory supplies and services, and orthopedic equipment.

Subject to unforeseen developments, it appears that pharmacy will not retain exclusive distribution of proprietary drugs. However, the sale of some home remedies by supermarkets, from an economic viewpoint, will certainly not be disastrous to pharmacy. The public may do some casual shopping for established remedies in grocery stores, but they will not rely on the health advice of butchers and bakers! The intelligent American public will continue to seek guidance on health problems from pharmacists and physicians. It seems likely that disenchantment with drug services obtained from "fishmongers," will be a self-limiting factor against significant sales of such items in supermarkets.

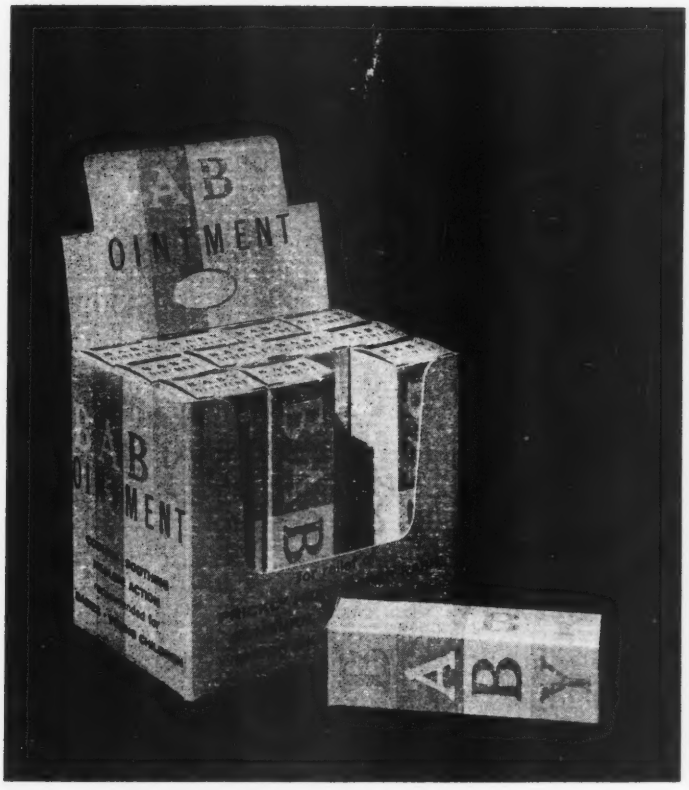
With our aging and aged population increasing almost as fast as babies, it seems inevitable that more oldsters will be cared for by their families, since Nursing Home costs and limited facilities will preclude placement of all these senior citizens in private institutions. Public institutions for the aged cannot possibly receive the enormous total of these people. Social Security and other governmental benefits to retired folks will become increasingly inadequate to support them. But these funds will help in defraying part of the cost of their maintenance, when added to the incomes of their families.

These oldsters will need above average medication and home nursing supplies. Here is a field for proper extension of pharmaceutical services.

By default of pharmacy, surgical supply houses have entered this field, but by prompt and aggressive action this substantial and necessary sickroom and home nursing accessory business can be acquired by alert drug stores. And with this service by pharmacy of invalid and nursing sundries, will come companion purchases of preventive medications, both proprietary and prescription. Hearing aid and physical therapy supplies; in some areas, opportunity for laboratory testing services; distribution of home testing materials, and other services supporting home care of the aging will, in the near future, become a major element in the total health services of pharmacy. All of this, plus the professional services nowhere else available, will bring back to the drug store the

(Continued on page 122)

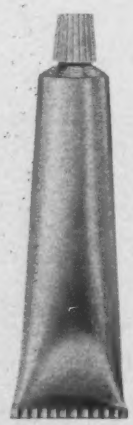
Packaging and Selling



Block Design Baby Carton

A new printed design, selected by S. E. Massengill of Bristol, Tenn., for its Baby Ointment cartons and counter display, uses color and idea association to merchandise the product. The cartons for the individual tubes are printed to resemble pastel colored blocks spelling out the word Baby. An adaption of this pattern in the same pastel colors is used on the counter display carton which holds a dozen of the individual packages. Both packages are made by Robert Gair Division Continental Can Company.

VALUABLE CONTENTS DEMAND THE FINEST IN PROTECTIVE PACKAGING



Manufacturers of all types of tin, tin-coated, aluminum, lead, and Sheffalloy tubes. To give your product a container that is safe, sanitary, lightweight, smart and convenient —specify SHEFFIELD. It pays to use the best.

Product of The Sheffield Tube Corporation
Established 1850...Finer packaging from a century of experience
Home Offices and Factory New London, Connecticut
Sales Offices • New York • Chicago • Los Angeles

SHEFFIELD TUBES

Packages and Women*

by Janet Myers
DIRECTOR OF PUBLICITY, BOURJOIS, INC.

Those of us who are not directly connected with packaging sometimes lose sight of exactly how important this aspect of the industry is to our customers. Instead, we get involved with the products themselves, with publicity and advertising claims, with marketing techniques and procedures. But all it takes to bring our thinking right back to the package itself is a very simple consumer panel test or retail market study.

Several years ago we ran such a test. There were three new names and three new fragrances in three unusual and completely different packages. Each of these fragrances was marketed in four test cities under what we felt were ideal "controlled" circumstances. Advertising lineage in each city was the same, testers and other sales helps were the same, the sales ability of the various demonstrators concerned was on a par, etc. Aside from the actual fragrances. the most outstanding difference between the three products tested was the distinctive way in which each of the fragrances was packaged. When it comes to the initial, introductory or first sale of any fragrance, the point-of-sale deciding factor is the package! Our test showed that even under the most controlled circumstances, sales of one fragrance, (or perhaps I should say one fragrance package), surpassed all the others!

These results were particularly enlightening since all three fragrances were also sampled in a consumer panel test where stock glass bottles were used, the name factor limited to a letter and the packaging reduced to nil. The results of this latter test? More than half the women testers preferred a completely different fragrance to the one that had been overwhelmingly purchased in the retail market test of the same three preparations.

We all know that in order to enjoy a healthy "repeat" business many factors must be taken into consideration in addition to product packaging. One of the most important of these is the product itself—but one of the prime motivating factors in the initial or first sale of any new fragrance is the packaging. On the basis of our test, it has to be the packaging!

Another factor women consider when they first purchase a fragrance is "the name." Does the packaging tie-in with the name and vice versa? The fragrances of today certainly run the gamut of the dictionary when it comes to names and the way these names are interpreted on our labels. Fragrance names can intrigue, enchant, and influence a woman's purchase. Unfortunately, there have also been a few cases where the fragrance name selected had connotations or secondary associations that made it the brunt of jocularity by salesmen and store demonstrators to the point where the fragrance was neither liked, respected nor treated seriously and it subsequently "died" on the shelf before enjoying any retail activity.

With fragrance particularly, the bottle is also extremely important. Here is one product or series of preparations that women buy, not only to use, but to display. . . in their bathrooms or on their dressing tables. They want a fragrance that not only "smells pretty" but "looks pretty."

COURTESY BOURJOIS, INC.

I suppose everyone can tell the story of their classic faux pas in this industry. Mine dates back to the time I was six months old in my job, suddenly called into a very important meeting, and asked to run over to one of the biggest department stores in the neighborhood with an unusual perfume bottle that had been under discussion at the meeting. I was told that this bottle had been submitted as completely new, different and original by a glass supplier. However, several people at the meeting thought it was much too similar to various competitive fragrance bottles for us to attempt to use. "Go to the perfume department and buy whatever is closest to this

*Presented at the recently held annual convention of the Toilet Goods Association.

The Snap-Cap . . . offers your users unmatched convenience. The cap "POPS" open . . ."SNAPS" shut tightly . . . no matter how often the container is used.

"Push-Up" Convenience . . . Push-up Bottom provides the convenience looked for by more and more users of stick-type products.

Colorful Lithographed Decoration . . . up to 4 colors . . . colors are bright and permanent . . . line art is crisp . . . lettering is clean and sharp.

New . . . Plastic Stick Containers with SNAP-CAPS

. . . Push-Up Bottoms . . . and bright lithographed decorations

Three basic advantages make this a sales-package that really works at point-of-sale! Its Snap-Cap . . . Push-up Bottom . . . and printed-label advantages give your product the extra convenience and eye-catching appearance it must have! Ask your Owens-Illinois representative to show you samples of the new Plastic Stick Containers. They're available in a wide variety of colors, in 2-ounce liquid capacity . . . other sizes on request. Call your O-I representative, today! Why not now?

OWENS-ILLINOIS PLASTICS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO

bottle," I was told. I hurried to do just that, taking the bottle sample with me. However since "comparison shopping" rather embarassed me at the time, on the way to the store I invented a logical story to tell the salesgirl I would soon encounter. It went something like this—my mother had been given this fragrance as a gift some time ago. . . and the bottle was so attractive that when the perfume was gone she hated to throw it away. . . and she didn't. Instead, she washed the label off and kept the bottle displayed on her dressing table for all to see. Since Mother's Day would soon be here, I thought it would be a wonderful surprise if I could purchase another bottle of fragrance to replace the empty bottle.

My story went over very well. . . in fact, too well. The salesgirl was not only understanding. . . but sympathetic. The moral of the story is that the idea of buying perfume for the bottle ALONE, without any discussion of the fragrance, didn't surprise the salesgirl at all. Women did it all the time!

Unfortunately for me, the story doesn't end with this moral. In her attempt to help me (and being unable to identify the bottle), the salesgirl took the cap off to see if there were any last traces of the perfume inside to give her a clue. I wish I didn't have to tell you that once the cap was off the bottle, the salesgirl really looked at me. The bottle had no opening, there was no possible way in which a fragrance could ever have been inside. It was a bottle mold and I'd left the office in such a hurry I'd never noticed it!

To get back to our discussion of fragrance bottles —in spite of the work that has been done to educate women regarding the lavish use of cologne, many women are still inclined to treat their cologne as precious perfume and use it much too subtly. The thought of letting it run lavishly over the body is considered so wasteful by many conservative and budget-minded souls that one of the "selling points" for a bottle of cologne is the fact that it has a "sprinkler finish" where the flow of cologne can be controlled. Maybe this point may sound a little far fetched to you,—but the information was learned "the hard way". . . from salesgirls, salesmen. . . and customers themselves.

Another packaging "must" from this same group is one that's taken for granted when it's there. . . but can rise up to plague you in its absence. . . and that is the absolute necessity for a gift box. . . even for summer cologne specials in the $1.00 price range. What is even worse, in many cases the fragrance isn't taken into consideration at all; the sale or the "no sale" boils down to whether or not the fragrance is gift boxed. If you think that bad news travels quickly, it's nothing compared to the speed with which requests for gift packaging are conveyed to you by demonstrators—(who incidentally dislike wrapping unboxed merchandise), salesmen and store buyers.

Now we finally come to the product itself. Whether we're speaking of perfume or cosmetics, make-up, treatment preparations or deodorants, the package that has the greatest sales appeal to the consumer takes into consideration not only the actual jar or bottle, the label and the outside container, gift box or carton—but the product itself. Does the product look good? Does it look as if it will do what the copy claims imply? Does it smell good? A salesgirl can be carried away by the purple prose of her treatment story regarding a cleansing cream, a moisture preparation, an eye cream. She can be telling her customer what miraculous things this product will do for her skin. . . but in the meantime what is madame customer doing? She's deciding in her own mind whether or not the product is "cosmetically acceptable." She's not only deciding whether it looks good in the jar. . . but she's smelling it. Once she's passed on these two points, THEN she'll give her full attention to the "treatment story."

Coming back to fragrance for a minute, when does a woman judge a fragrance without smelling or sampling the fragrance? When she sees the color! The color of perfume, cologne or toilet water is, as you know, extremely important and an integral part of the successful fragrance package. How much easier it is to convince a woman that the sultry, provocative fragrance with the glamorous bottle and dramatically striking gift box is all it's claimed to be when the color of the fragrance itself is also dark and provocative looking. To the average consumer, the color of the fragrance is the only means she has of judging its long-lasting qualities, its strength headiness and allure.

In a slightly different way, the same thing is true of cosmetics and treatment preparations. It's so easy for those of us in the industry to lose sight of the fragrance, the color or even the appearance of a product if it has a sensational ingredient story—when we can actually tell a woman, "If you use this cream. . . you'll see amazing results. . . right away!" Certainly women want to see results, but this doesn't mean they're willing to purchase a result-giving product unless it is visually attractive at the same time.

Take firming, molding lotions, for example. As manufacturers, we make certain justified claims for products of this type. . . but how many sales would be lost if the clever package designer didn't prevent women from seeing what they were buying. Firming, molding preparations come in opaque or fired bottles so they'll look attractive and prevent the ever inquisitive customer from seeing the way two or three of our "mystery" ingredients look in separation. . . interspersed with floating globules of oil.

Then there's the fragrance aspect of cosmetic packaging. A mask may do all for the skin that we say it does. . . but while a woman listens to the selling points of this product. . . nine times out of ten she'll bring it to her nose. The very ingredients

(Continued on page 124)

The manufacturer asked:
"Wise William — my pharmaceutical product is quickly consumed — why should I use an H-A *Stock* Container?"
Wise William answered:
"The good that H-A packages do lives after them."
SHAKESPEARE

Don't be mislead into thinking that the name Hazel-Atlas *Stock* Containers means that because they're standard they're *ordinary*. They're not. In light-protecting amber, crystal-clear flint and gleaming white opal, they are so beautiful, so appealing at first sight and in use that they live in the mind of the consumer for a long time after your package is empty.

Your production and shipping departments remember H-A containers for the rigid quality-controls keeping them uniform in size, shape, clarity and color — for their efficient performance on the filling line, and for H-A's fast, dependable delivery during sales peaks and emergencies. And your entire organization remembers how well they are served by H-A's nationwide network of glass plants and warehouses. Call your nearest H-A representative or write today.

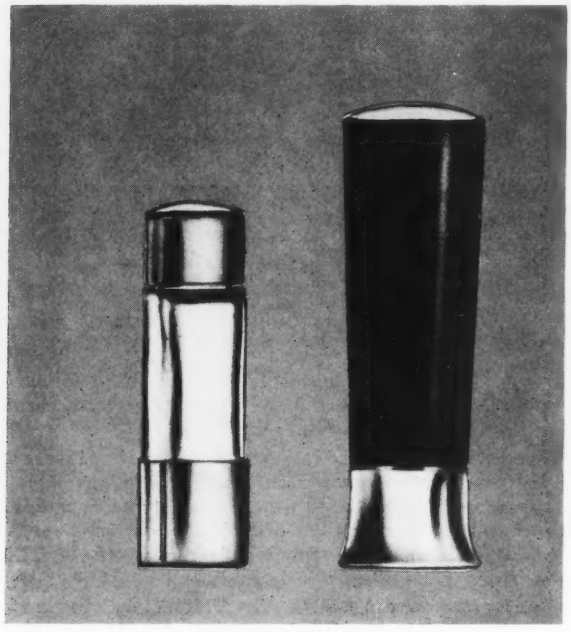
...glamour in glass!

HAZEL-ATLAS GLASS division of CONTINENTAL CAN COMPANY
Wheeling, West Virginia

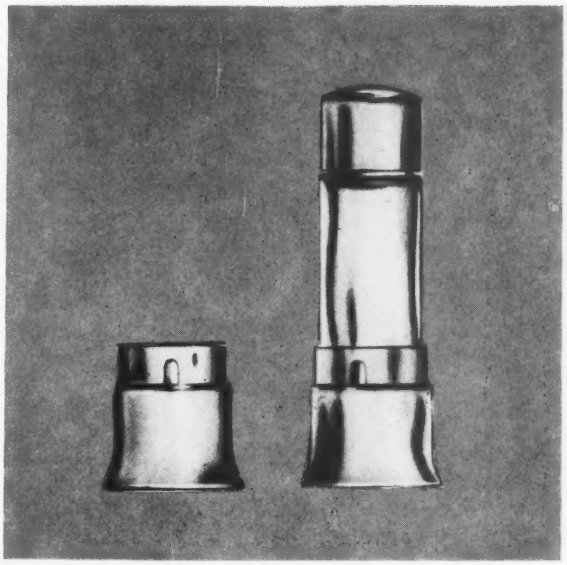
NEW SALES APPROACH to Cosmetic Containers

Distinctively styled cosmetic containers at lower prices and with remarkably early delivery dates are now possible through utilizing the principle of interchangeable parts so as to achieve maximum mass-production advantages. Scovill Manufacturing Company's Drug and Cosmetic Container Division has developed techniques to produce custom-designed containers at standardization costs. Although Scovill continues to offer the specially designed manufacturing procedures to customers desiring individually tailored cases, many firms are placing orders for containers utilizing the new technique.

Here is how the system works. Scovill production executives have broken down the containers into their component parts and are mass producing a number of types of each part, any of which can be combined with any of the different types of the other



component parts. To illustrate, the basic component parts of the lipstick case are the base assembly, holder cup, and the cap. The lipstick manufacturer selects one of each of the types and combines them for his own use. To achieve further distinctiveness, the cosmetic company, by paying necessary fitting up charges and extras on the regular piece prices, can have special shaped caps and stamped designs or lettering on the top or side walls, and printed or enameled designs or bands in colors on the side walls.



The same can be done for the base assemblies.

Because all parts come mass produced, utilizing basic designs, there are no fitting up charges, which in the past cost up to $20,000, and the usual fitting up period of from 12 to 16 weeks is eliminated, according to William H. Harris, sales manager of the Drug and Cometics Container Division. This new production technique permits producing reorders without delay.

Scovill, which plans to apply its interchangeable parts technique to other products, is currently offering brochures describing standard parts for swivel lipsticks, eye shadow containers, refillable lipstick containers, push-up and sampler lipstick containers and refillable pursers. The last is an outside case which accommodates standard refill units.

The standardization program as developed by Scovill may well be one of the most productive steps taken in recent years by a supplier to the cosmetic industry.

The modern lipstick can be said to have been the result of a meeting in New York in 1915 between Anthony Guash, a French cosmetic manufacturer and Maurice Levy, an American investor. Their meeting had been arranged by an official of the Scovill Manufacturing Company and resulted in the formation of the French Cosmetic Manufacturing Company. This company became the first firm to market lipstick in metal tubes.

The first lipstick container developed for the French Cosmetic Company was a simple, oval-shaped tube about two inches long, in four different finishes: pol-

(Continued on page 126)

IMITATED...BUT NEVER DUPLICATED IN PERFORMANCE—

THE *Precision Valve*

We, at Precision, are justifiably proud of the performance record that the Precision Valve has achieved in the hands of thousands of users.

Precision is today the largest manufacturer of Aerosol Valves. Largest because of our designing, engineering and manufacturing methods which have created a quality, economical product, that has proved itself in use. Over 500 Million Precision Valves offer proud testimony of our ability to create THE VALVE for your product.

Whatever your aerosol product does . . . It will do it better with a Precision Valve.

Why not call today... Our laboratory and engineering staffs are available to aid you with your valve requirements.

"Known throughout the World"

PRECISION

Precision Valve Corporation

700 NEPPERHAN AVENUE • YONKERS 3, NEW YORK

Packaging and Selling

Private Label - Threat or Fancy

During the past few years we have commented several times in this department on the rapid spread of retail interest in the retail owned brand. That this movement has been growing and growing rapidly in every retail trade has been increasingly evident in the business news of the last several months.

While the greatest expansion of the retailers private label has been in the food field where there are a number of enormous retail chains, any one of which far exceeds any manufacturer in wealth and power, this interest of the retailer has been rapidly penetrating this industry in the department store field, in drug chains and in the non-food division of the supermarkets.

This growing roadblock to manufacturer's expansion has been recognized by the Grey Advertising Agency by devoting to this subject the June issue of the National Advertisers' Edition of "Grey Matter." In this unusually large issue Grey takes the title "Who's Battling Whom?" and starts off with the statement, "Controlled brands offer no threats that alertness, ingenuity, resourcefulness and skilled marketing and advertising cannot overcome" and then again, "Even the most powerful retailer or distributor cannot force a brand down the shopping public's throat."

While this is very reassuring to the manufacturer, the blunt facts are that private label manufacturing for retailers is growing at a tremendous pace, the number of new retailers introducing a private label line is expanding and the number of products coming under the private label designation is also expanding. In addition to that, as just one quote to balance the quote of Grey matter, we will repeat the statement we published a few issues ago of the executive of a leading Chicago department store who said, "We have encountered no trouble in getting customers to accept our stores private label."

Grey's answer to the private label problem on the part of the manufacturer is, of course, both more and better advertising. As this agency puts it, "A program of strong promotions designed with expert knowledge of retailing, realistically timed, and intelligently executed." And furthermore, in order to exert his superiority over the chain or local brand the national manufacturer can out-advertise it, "not necessarily in volume, but in imaginative, dramatic selling ideas, in advertising that will engrave i tself on the consumer's consciousness and guide his hand to the advertiser's brand."

These are unquestionably very pretty words and they flow as smoothly as a rippling country brook.

Again the facts are that this epidemic of invading private brands is taking place at the all-time peak of allout spending by manufacturers of national brands. So far as we have been able to observe, at the very time when manufacrurers are spending every single dollar they could squeeze out of their income in advertising and using every sort of a brilliant and extravagant idea to engrave themselves on the consumer's mind, this is the very time which the retailer has selected as offering to him a very juicy opportunity for starting his own brand.

In addition Grey makes the specific point that, "The 'battle of the brands' as it's commonly called is being fought on a wide front. Obviously, (please note this word obviously) in industries where there are no truly strong national manufacturers' brands the struggle has little significance. But in fields where there are powerful brands: liquor, drugs, electrical appliances and food, the din of battle is terrific."

Now will somebody please explain to us just why, if more advertising and more of the kind of advertising ideas we have been developing is the true answer to overcoming the private label, then why is it that most of the private labels are finding their best opportunities in the field of most heavily advertised brands, and as Grey points out, the least opportunity in industries where there are no strong national brands or strong brand advertising.

It seems to us that there is nourishment for a great deal of heavy meditation on that particular point.

Now to come specifically to this industry and to again quote Grey we have the following, "The drug market has not undergone the convulsions of the food industry. The blooming and flowering of huge drug chains has not been nearly as spectacular as in foods. The independent druggist has shown a hardiness which the small grocer did *not* possess. Nevertheless, the drug field, too, is giving signs of *restlessness*, particularly since the food supers have established so *strong a supermarket bridgehead* in health and beauty aids."

"1. Elated by their success in self-service selling of health and beauty aids, and by their ability to get

"volume at a higher markup," supermarket chain operators are exhibiting growing discontent about letting this new department live off store traffic. And so we find large operators exploring the potentials for store-controlled brands in such items as aspirin, shampoos, hair dressing, shaving creams. A & P's selling a tooth paste under their own label in southern states is a harbinger of things to come.

"2. The department stores have long been trying to push their own brands in drugs. (Macy's has 735 products under its own label in drugs and cosmetics.) Branch stores are increasing the consumer's exposure to the department stores' labels. . . a fact which cannot be ignored in any discussion of the "battle of brands."

"3. The independent druggist, through their association, sound a warning to manufacturers of "national standard trademarks" that their only refuge from the growth of chain brands is the small independent druggist whose good will is being sacrificed for the blandishment of the giant.

"4. However, since the corner druggist is converting more and more to self service (25 per cent of U.S. drug stores are already on self service), he will be forced to depend on known brands to a much greater degree. Hence his rage and frustration."

There are a couple of things here we do not quite understand. According to the above analysis the grocery supermarket is very discontented to let health and beauty products ride the coattails of store traffic on the self service stand, but the fact that the druggist is putting in a self service stand, by some contrary form of reasoning, seems to eliminate the private label.

As for the elation of the supermarket dealer, at their success in handling health and beauty aids, we have been told again and again by supermarket operators, and it has been said again and again in speeches in supermarket conventions and in supermarket business publications that the one wonderful thing about health and beauty aids in the grocery store was that they gave the food retailer a mark up of relatively double that of the nationally advertised food brands. Therefore, we do not quite see the point that these particular gold nuggets are riding on the coattails of the store traffic. We would be more inclined to suspect that this urgent drive for more private label business, especially by the grocery store, is based largely on their realization that the consumer is willing to pay an extravagant retail markup, from their viewpoint for these products over and above the cost of production.

It seems to us that the manufacturers of national brands and the advertising agencies who are nourished by them have arrived at the point where they had better pull their head out of the sand and get down to some drastic and painful self analysis. Retail private labels are not growing and expanding or becoming a great deal more interesting to retailers because national manufacturers are spending too little money in national advertising or because they are void or lacking in advertising ideas. We would suggest as a field for mental exploration some of the following pastures.

1. The cost of retailing has been rising at so rapid a rate that for many retailers rising prices and increasing sales volume have not compensated for the rigidly fixed limits of their sales commission. The tendency of a great many manufacturers to minimize point of sales help and throw this all into national advertising has put high cost retailers on a spot.

2. The tendency of a great many national manufacturers to try to take away from the retailer all of the functions of selling and to concentrate these in his own hands through the use of mass national advertising has been irritating and in some cases frightening to certain classes of retailers. The fact that national advertising does not bring a compulsion for any specific brand and that the consumer's conflicting wants and desires can be manipulated in an amazing variety of ways at the point of sale, have encouraged some retailers to believe that they are not quite the automatic despensing machines which many manufacturers believe them to be.

3. During this period of lavish buying there has been an extravagant tendency in many places to adopt the theory that a high retail list price with a huge advertising campaign is more intelligent marketing than a medium retail price with a medium advertising campaign. The growth of the discount house, the progressive breaking down of fair trade, the epidemic of false list prices and in fact, the very chaotic pricing situation in the retail trade today from automobiles all the way down to aspirin is ample proof that the manufacturers of this country have, in many cases, created a retail price structure that is open to sharpshooting from every direction, including the growth of private label. A few months ago we cited the fact that a supermarket was selling a Schick electric razor regularly retailing for $29.50 for $14.95 net. The electric razor has been one of the most vulnerable products in its pricing, so that there is a general opinion among electric razor buyers today that one who pays the list price of any electric razor is an imbecile.

According to Grey's analysis, the manufacturer must now recognize that his brand is not only in competition with the strong brands of other manufacturers, but with the giant retail brand and wholesale-retail brand. How should the manufacturer fight back? Grey believes that "Tests have demonstrated to many retailers that when they give their own brands space and position out of proportion to their turnover, it proves costly in lost sales." We agree heartily with this point but would suggest also that nobody is more alert than the big retailer to toss out a manufacturer's national brand when it does not pay for the space it occupies on the retail shelf.

It is the definitely proved experience of this industry with retail brands, prior to World War II, that only a limited number of retailers had the ability to promote their own brand. Nevertheless, the private brand, at that time, was a substantial factor with many important major retailers.

Again according to Grey, "While consumers may not show preference to any one of a number of *well-known products*, there is an extremely high rate of rejection for unknown or little known brands." That is certainly one of the facts of life in marketing pack-

CANS WITH EXTRA SALES-APPEAL . . .

All the way around

Reflect for a moment on the picture above: six major brands of sweet-smelling talc. They've all made use of the sweet, selling advantages in Continental's specialty cans. There's plenty of room for directions, sales messages and information—all around the package. Plenty of room for unusual decorative effects—with no break in the design. We can give *your* product this same sales-appeal; Continental specialty cans are available in a technicolored variety of shapes and sizes. Call on us for details—*soon*.

Here's what happens: every angle of a Continental specialty can is lovely. The reason: our fine, expert lithography. Wide range of colors. Unlimited design possibilities.

QUALITY Continental SERVICE

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

Imagination

AN INTEGRAL PART OF THE CONTAINER WHEN MARYLAND GLASS TAKES OVER YOUR DESIGN PROBLEM!

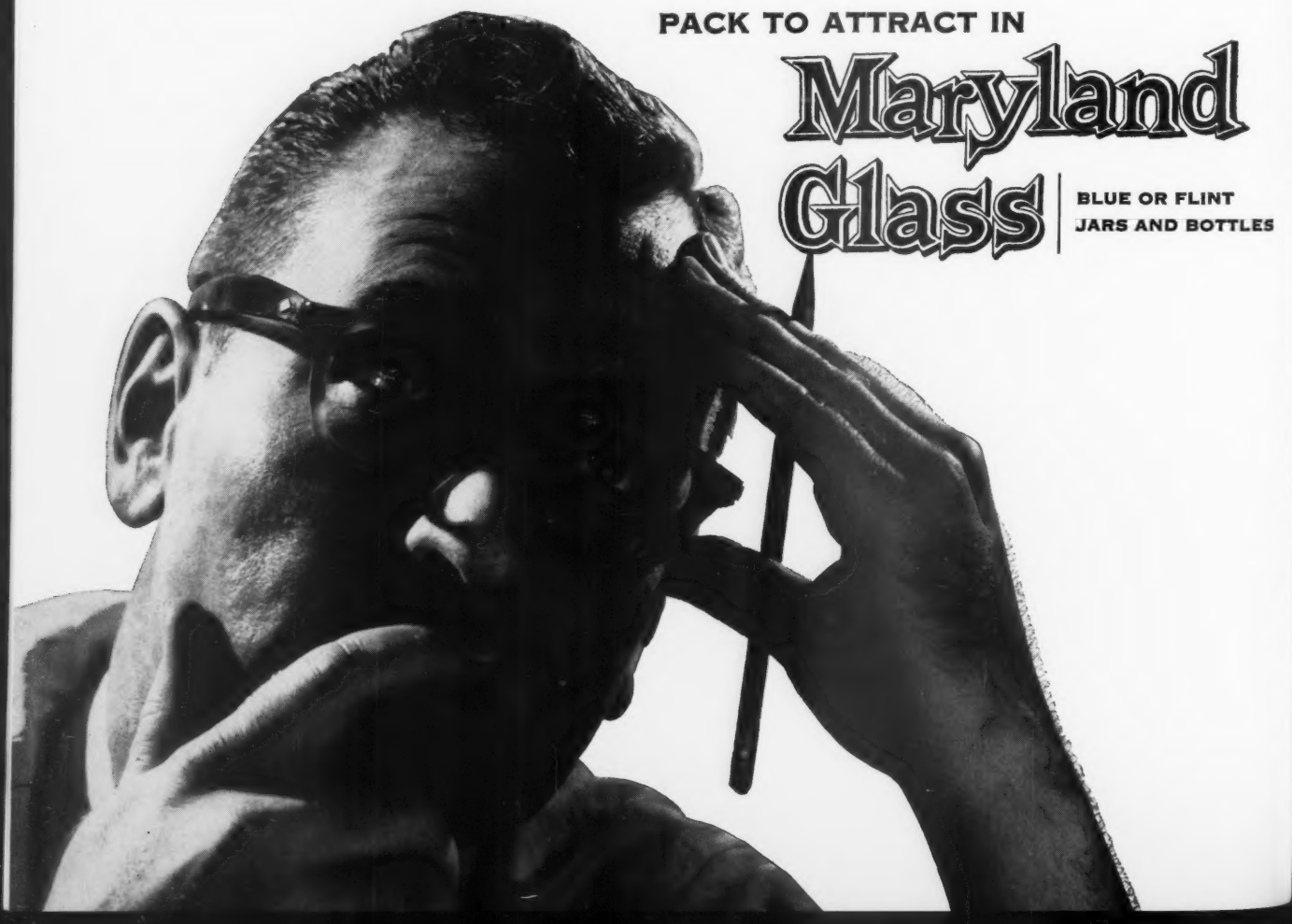
When you drop a packaging problem in our lap, the end result is more than a glass container. It is an *idea* . . . born of restless imagination, shaped by skilled hands, backed by years of sound experience. Our creative staff gives you a selling package that packs well, ships well and pushes your product on the shelf. For a successful solution to your design problem, contact MARYLAND GLASS CORPORATION, 2147-53 Wicomico St., Baltimore 30, Md.

STOCK DESIGNS
—A variety in blue or flint glass and a complete range of sizes is ready for immediate shipment.

PACK TO ATTRACT IN

Maryland Glass

BLUE OR FLINT JARS AND BOTTLES



aged goods in America today. However, it is true that some retailers have the advantage of a store reputation, a store personality and a store confidence so that with intelligent merchandising at their own point of sale the private labels of this store can hardly be called an unknown brand. An excellent example is coffee in a chain such as A & P or Bohack.

We recommend this bulletin to people in our industry because this is a comprehensive analysis of a subject which we think is going to be of increasing importance to this industry in the near future. As this condition grows, we hope and expect that it will be a cycle similar to the one we went through between the two world wars. To our mind there is no question but that the retail private label will have a place in marketing. That place will grow in importance as retailers grow in concentrated strength and as manufacturers leave too wide a margin between cost and sales price. Nevertheless, there is a level at which this thing will settle. In the meantime it can be one of the complicated problems in this complicated marketing era.

The Grey Advertising Agency, Inc. is located at 430 Park Avenue, New York 22, N. Y. and the bulletin is the June edition of the National Advertisers' Edition of Grey Matter.

Advertising Profits

A cosmetic manufacturer who claims that he is a good man with a sharp pencil recently made the following statement at a cozy little cosmetic meeting.

"A certain leading department store last year made a net profit of $125,000 on its Christmas catalog. In addition, the charges made to manufacturers for space rates over and above the store's local rate, plus the charges made for art work, newspaper mats and other services of the advertising department resulted in an overall outside earnings by this department which put it at the top of the list over all of the retail departments, in profit per square foot and profit per employee."

No wonder store management is eyeing the advertising department with increasing approval and their vendors with a growing speculative gleam in their executive eyes.

Worth Reading

"88 Current Merchandising Concepts—And Their Practical Application" is the fourth in a series of studies by E. B. Weiss, Director of Merchandising of the advertising agency Doyle, Dane, Bernbach, Inc. We have favorably commented here on some of these previous studies. This one, like the others, is complete, informative and with a wealth of stimulating information. Among the subjects covered in the study are the following: The fascinating and illogical growth of "fads". . . The growing market formed by elderly persons. . . The growing importance of trade-ins. . . Merchandising strategy for smaller manufacturers. . . Is selective distribution on the way out? . . . A circus comes into merchandising. . . In total, a package of 88 stimulating discussions.

Perfume Promotion

This year Lanvin will use 10-second television spots with a humorous commercial. The cartoon will, in each case, have a card which says "Just Married" and the commercial says "It could have happened sooner, with Arpege Perfume by Lanvin."

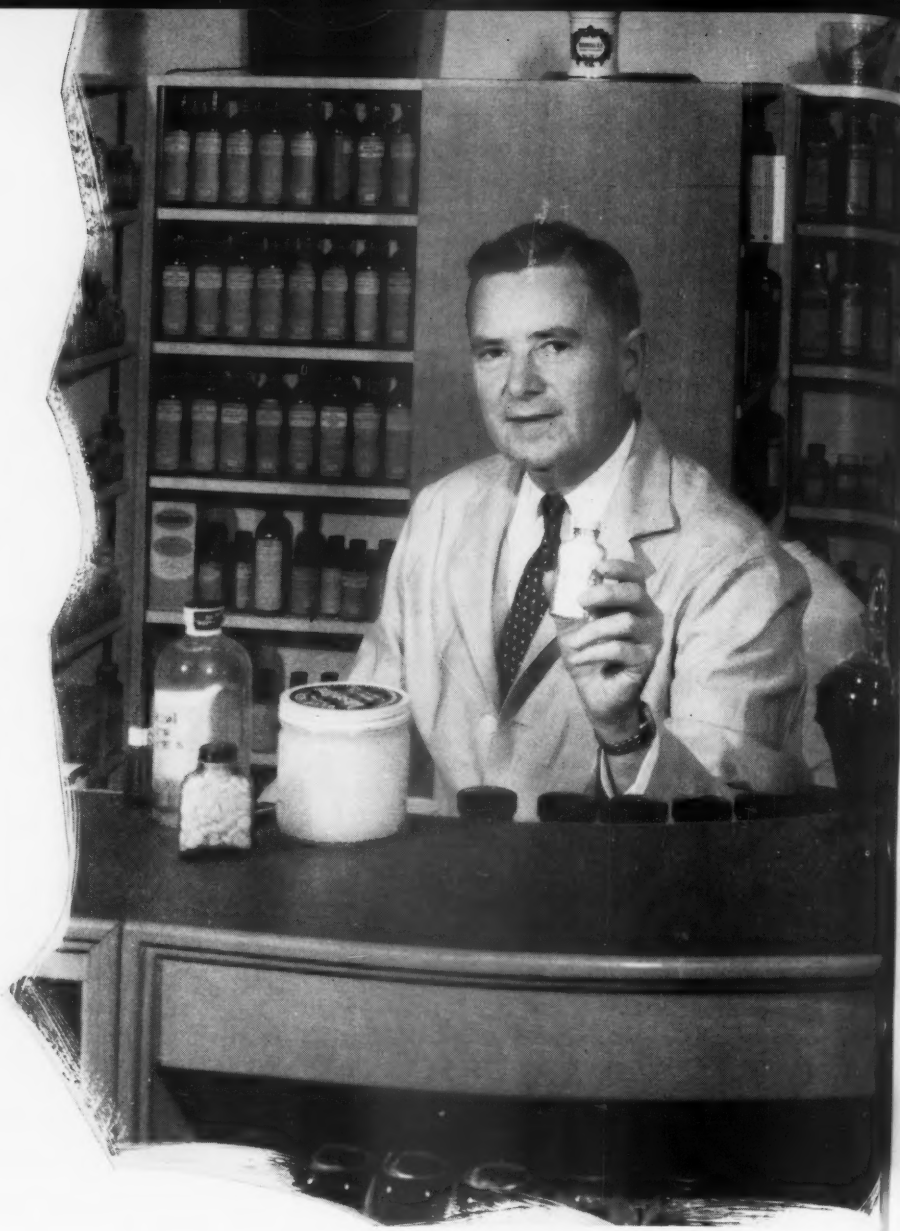
Scientific Packaging

Anyone who attended the recent Package Research Conference in New York must surely have come away with the idea that packaging, while normally considered by business a very essential and practical affair, is entering also into a field of abstract theory. J. Gordon Lippincott, of the package design firm, started the meeting with a very practical statement in which he said, "Packages should do just one thing—get across to the public instantly an unmistakable image of what the public expects of the product inside. The job of package research, and the aim of this conference, is to seek out those hidden appeals."

However, Dr. H. A. Witkin, director of the psychology laboratory of the State University of New York, told how his perception studies revealed new facts about the way people look at things. He stated that a simple geometric design, striking and memorable when seen alone, may virtually disappear, or become "imbedded," when displayed with other designs. Applying this to packaging we find in Dr. Witkin's words "Substitute a package for our simple geometric design, and the confusion of a supermarket shelf for our cluster of designs and it is clear that perception research has a very direct bearing on package design and on today's marketing situations." Just to make it even more scientific Dr. James G. Miller, director of the Mental Health Research Institute at the University of Michigan, described the advances made in laboratory techniques which have not yet been applied to packaging. According to Dr. Miller, there is a new mathematical procedure for making decisions called the "game theory" which may prove of value in determining which factor in a package is most important—its color, shape or size.

Barbara Kaye of the Market Planning Corporation has this thought to offer the busy package designer. "A good package is one which evokes an impulse readily gratified by the product and which at the same time provides a 'defense' which makes it possible

glass containers move more drug products



Use Anchorglass® *containers sealed with* Anchor® *caps*

. . . because they protect the contents

AN important reason why consumers prefer the glass package is because the purity, strength and other qualities of the contents are fully protected. High in chemical durability, the glass container is inert to most products...cannot change them in any way. Moreover, housewives recognize it as the most sanitary package. It can be resealed tightly...unused contents are safely stored and protected indefinitely. Move more of your products and give them dependable protection in glass . . . in Anchorglass, sealed with dependable Anchor metal or molded closures.

ANCHOR HOCKING
GLASS CORPORATION
Lancaster, Ohio

for the customer to satisfy her impulse in a socially and personally acceptable manner." Clenching all these gems of wisdom for the practical designer is the copyrighter for a leading advertising agency who thinks that package research calls for a completely fresh approach. "The traditional survey techniques are virtually useless in package research for the simple reason that people just do not understand their own behavior and attitudes."

It seems to us that if this sort of thing keeps up, the entire packaging industry will be developing some new behavior attitudes because a great many of them won't be entirely sure that they know what they are doing.

Fragrant Buses

What some people think of perfume was brought out very graphically in a Brooklyn newspaper when a reporter interviewed bus riders on a bus where there had been installed a device to give a positive pleasant odor to exhaust fumes.

Here are some typical remarks. "One expensive perfume nauseates me. Antone makes me sneeze my head off. I hope we're spared such an obnoxious experiment." Here's another. "I really enjoy the smell of bus and truck exhaust fumes. Why ruin them?"

And still another. "It might be pleasanter for back seat riders when bus windows are open in warm weather. Has anyone thought about spraying a smell-killer on some of the passengers?"

Before anyone shudders as to the future of the fragrance industry or the widening use of fragrance in making life pleasent, let's hasten to ad that the majority were favorable.

Packaging Why Not's

Here are some provocative thoughts on packaging by Ferd Ziegler, sales promotion manager of McCann-Erickson.

(a) If a package design is outmoded, how should it be changed—drastically, or gradually?

(b) If package design changes are such wonderful sales boosters, shouldn't they be changed constantly?

(c) When a new package design comes out, what happens to the 'old' packages on retail shelves?

(d) Is research killing individuality in design?

(e) How much packaging is necessary—for example, must a tubed product always be encased in a carton, be overwrapped?

(f) Must every package be changed—the Coca Cola bottle, for example?

Two New Surveys

We have just received two of those consumer panels out of the dozen or so published which are so valuable to us each year in appraising the status and profits of many brands in this industry.

One is the Minnesota Homemaker Survey No. 8 conducted by the research department Minneapolis Star & Tribune, covering the Minnesota market and the 11th annual edition, Consumer Analysis by the McClatchy Newspapers covering the Sacramento, Fresno and greater Modesto markets. Copies of each of these surveys can be obtained from the research department of these newspapers.

How to Spot an Impulse

"The Hidden Persuaders" is a persuasive name of a new book that should have a great deal of appeal to the businessmen in our industry. This is a book on that rather bewildering subject, motivational research, or what makes people do what they do, that has become so basically an important factor in marketing in the last few years.

Vance Packard, the author, is a former newspaperman who has been writing on allied subjects for a number of years. Because he is a newspaperman, he has made this whole subject of consumer motivation an interesting and understandable one.

The laboratory has been very late in coming to the front executive offices in this industry. Almost everyone pretty well agrees with the saying "research or die" when it comes to product and package development, but it is only lately that this same mental attitude has applied to market analysis and to consumer reaction, before the expensive process of product introduction has been initiated.

For the businessmen who feel that they need an understanding of basic consumer motivations, their fears, their frustrations, their wish fulfillments and all of the bewildering pyschological factors that culminate in a buying decision, we think this book will be interesting and useful. Published by David McKay Company, Inc., 55 Fifth Avenue, New York 3, N. Y., at $4.00.

Good Measuring Rod

A good measuring rod of company efficiency is to compare with other companies or other industries the sales per employee of your company. For instance, here are a few comparisons. In chemicals, sales per employee are $24,700. In food, $25,900. In tobacco, $39,800. In textiles, $12,200 and in apparel, $7,400.

We have never seen the figures for pharmaceuticals or proprietary medicines or cosmetics. This would make an interesting industry measuring rod.

Pointed Ad. Comments

Advertising is highly effective in attracting new buyers to a product, but ad dollars spent to retain old customers accomplish considerably less.

A protracted advertising campaign increases sales rapidly at first and then at a reduced rate until a saturation level is reached, beyond which additional advertising does not attract new customers.

Reaching the saturation level does not mean that the market is saturated, but simply that the power of that campaign to generate sales is exhausted.

These are some of the remarks made by Dr. Vidale of Arthur D. Little Inc. at a recent conference on advertising.

Pine Board?

If pine board stores are ever to return, perhaps the big food chains will bring them back. A recent experimental Grand Union Store is a small store 100 per cent self-service—gravity-fed shelving. The store issues no trade stamps and features a limited selection of products, with some Grand Union private labels.

GLASS STIMULATES SALES
The graceful contours and pleasing proportions of our new 443 stock bottle make it an outstanding container for your finest products. With an attractive fired-on label it makes a cosmetic package of unquestioned beauty.
443
Toiletries
CARR-LOWREY GLASS CO.
Designers and manufacturers of fine glass containers
Factory and Main Office: BALTIMORE 3, MD. • New York Office: 415 MADISON AVE. • Chicago Office: 1572 MERCHANDISE MART

NEWS IN PACKAGING...

PI Drug and Pharmaceutical Seminar Program Announced

The all-day drug and pharmaceutical seminar to be held during the Packaging Institute's 19th Annual Forum is scheduled for October 29, according to an announcement by Carl B. Burnside, chairman of the institute's drug and pharmaceutical committee. The forum will be held October 28, 29 and 30 in New York's Hotel Statler.

Moderator of the seminar's morning sessions will be John A. Walls of Rexall Drug Co. Speakers and topics are:

"What is Packaging Development?" by G. J. Schleck, Merck and Company.

"Package Development at Procter and Gamble" by R. E. Belliveau, The Procter and Gamble Company.

"Facilities, Standards, and Personnel for Package Development" by H. E. Nack, Packaging Consultant.

C. V. Peterson of Ciba Pharmaceutical Products, Inc. will moderate the afternoon sessions, which will include:

"The Collapse of Time" by L. H. Zahn, Deputy Director, Containers and Packaging Division, B.D.S.A., Department of Commerce; "Genetron Plastic, Film and Tubing, in Packaging" by Robert Kurtz, Unette Corp.; "It Helps If You Know Where to Look" by Charles E. Lewis, Director, Business and Defense Services Administration, Containers and Packaging Division, Department of Commerce; "KEL-F . . . Halogenated Flurocarbons . . . Plastic for Packaging" by Dr. H. S. Kaufman, Chemical Division, Minnesota Mining and Manufacturing Company.

"Spray-Band," an aerosol bandage containing Tyrothricin, is being marketed to the public by the Medical Products Division of Schueler & Company. The product was introduced to hospitals and physicians a year ago.

Sun Tube Sales Executives

Albert B. Nichols Jr. has been appointed sales manager of the Tube Division of Sun Tube Corporation, and Gordon Barlow has been appointed assistant sales manager, it has been announced by Claude L. Alexander, general sales manager of the company.

Mr. Nichols, formerly assistant sales manager of the division, has been with Sun Tube since 1951. Prior to joining Sun Tube in 1954, Mr. Barlow was with the New York office of the Owens-Illinois Glass Company.

ALBERT B. NICHOLS JR.

GORDON BARLOW

Crown Cork Promotions

Promotion of Edward P. Stuart to division manager of sales of the Can Division of Crown Cork and Seal Co., Inc. has been announced by John L. Carnie, general manager of the division.

Robert J. Siebert has been appointed sales manager of the newly created Eastern area. Formerly, the Can Division divided the Atlantic seaboard into two separate areas—Northeast and Southeast. Mr. Siebert, now responsible for the entire area, formerly was manager of the Northeast region.

Two new glass containers, a 4 11/16-ounce opal bottle and 4-ounce opal blown jar with pressed cover, are new glamour offerings of the Hazel-Atlas Glass Division of Continental Can Company. They are attractively styled for packaging of vitamins, drugs, pharmaceuticals, cosmetics and other products that sell best in high-style containers.

Purepac Appoints Lauter

Jack S. Lauter has been appointed general manager of Purepac Corporation's manufacturing laboratories at Los Angeles, which serve the eleven Western states, according to an announcement by Claude S. Welton, executive vice-president. Mr. Lauter was formerly divisional sales manager in the area.

Aerosol Production Automation

Manufacturers of drugs and cosmetics packed in pressure cans can look forward to expanded markets "when push-button packages are produced by push-button methods," an official of the American Can Company's new products department recently told the convention of the Chemical Specialties Manufacturers Association.

Telling of the impact of automation, Joseph H. Fredette, assistant to the department general manager, said that while the rate of line filling operations now ranges from about 60 to 150 units per minute, future lines will handle more than 300 filling operations a minute with less labor.

"The future should reveal," Mr. Fredette said, "potential markets that can be readily confirmed. This knowledge, in turn, should release the capital investment funds needed to travel the dual road to automation. You will find the cost justified by the resulting ability to supply your markets on a sound, profitable basis."

Manual operations that will become automatic, he predicted, include the receiving, storing and feeding of cans to the line; insertion of valves; application of buttons and overcaps, and packing, sealing and stacking.

whatever you **can** . . .

can with CROWN Spra-tainers

For pressurized shaving creams or hair-set lotions—for literally hundreds of cosmetics or personal products for "his" or "her" use—*can* with CROWN Spra-tainers.

Spra-tainers offer the marketer many advantages. Metal guarantees no breakage. Seamless construction is modern design. Full wrap-around lithography lends beauty and high fashion. This means that Spra-tainers actually give your packaged products *extra* sales appeal for faster turnover. Your product deserves the best—call on CROWN for Spra-tainers . . . seamless or fabricated.

Write for your copy of CROWN's new 3rd edition—"GUIDE TO PRESSURE PACKAGING." Crown Cork & Seal Company, Inc., Can Division, 9348 Ashton Road, Philadelphia 36, Pa.

whatever you can . . . call on CROWN

CROWN CORK & SEAL COMPANY, INC.

MANUFACTURERS OF CLOSURES, CONTAINERS and MACHINERY

Patent thoughts and trends

by Thomas Cifelli, Jr., PATENT ATTORNEY*

BRISTOL'S TETRACYCLINE-PHOSPHATE PATENTS

On June 11, last, the common stock of Bristol Meyers rose $4.00 per share and the following day the "New York Times" and other newspapers attributed the rise to a new patent which had just been issued to Bristol Laboratories tor tetracycline.

On June 13, last, the common stock of Olin Mathieson rose over $4.50 per share on a turnover in excess of 100,000 shares, on a *rumor* that one of the steroids developed by Squibb, a Mathieson subsidiary, had proved to be effective in cancer.

These two incidents are mentioned to indicate the very close attention which the financial world gives to research developments. In view of the fact that we here are interested in the patents resulting from such developments we can do no less than look into the subject of the flurry on Wall Street just noted. Since we are also interested in fact rather than fancy we shall limit our attention to the tetracycline patent situation.

By way of background, it will be recalled that a few years ago it looked as if the drug industry were going to settle conflicting patent claims on tetracycline in a rather atypical—for the drug industry—manner. That is to say there was some litigation instituted and there were appearances that there would be a knock-down-drag-out fight. However, as pointed out in these columns about a year or so ago, a peaceful settlement of this situation was finally effected. Judging from published statements it appears that Bristol, Upjohn and Squibb were granted non-exclusive royalty-bearing licenses covering the use and sale of tetracycline under the product claim of a Pfizer patent and that Bristol had also been licensed to manufacture under this patent. Also, it was understood that Pfizer and Bristol had exchanged options to obtain licenses under their U.S. and foreign patent rights relating to processes for the production of tetracycline. American Cyanamid is also in this patent picture.

Before considering the latest Bristol patent in this field one may well ask: If the actual arrangement is as stated above, why did Wall Street ignore the impact of the latest Bristol patent on the other companies concerned? However, such considerations are not the concern of this department.

The two Bristol patents dealing with tetracycline-phosphate are believed to be U.S. 2,791,609 issued May 7, 1957 and U.S. 2,795,528, issued June 11, 1957. As a matter of fact neither patent on its face was issued to Bristol as the assignee. Each patent was issued in the names of the inventors only. The inventor of U.S. 2,791,609 was Murray A. Kaplan and the inventors of U.S. 2,795,528 were Frank H. Buckwalter, Murray A. Kaplan and Alphonse P. Granatek.

U.S. 2,791,609 deals with a tetracycline metallo-phosphate hexametaphosphate complex. This complex is said to have improved therapeutic effectiveness by comparison with amphoteric tetracycline and tetracycline hydrochloride, both of which have been in clinical use.

The patent which really caused the flurry in Wall Street is believed to be U.S. 2,795,528 and therefore, we shall give some detailed attention to it.

Briefly, the invention covered by this patent is based on the finding that unusually high blood levels are obtained by the oral administration of a mixture of an acidic salt of tetracycline and a source of phosphate ions other than the orthophosphates.

The inventors first point out that a lot of unsuccessful work has been done in order to increase the speed and the efficiency of absorption of antibiotic in both oral and parenteral administration. However, very little is known by way of general principles and in the case of oral administration the inventors claim there are no methods known for increasing the speed or efficiency of absorption other than the use of highly water-soluble salts, e.g., potassium penicillin.

The inventors object was to formulate the tetracycline so that upon oral administration there would be produced immediate absorption into the blood stream of amounts which are greater than those obtained by the use of formulations such as capsules, aqueous suspensions, aqueous solutions of tetracycline hydrochloride, tetracycline base or calcium tetracycline.

As regards tetracycline antibiotics, the inventors say that any acidic tetracycline salt or the physiological equivalent thereof may be used. They prefer tetracycline hydrochloride and the tetracycline sodium hexametaphosphate complex. By the term "physiological equivalent" as used in the patent is meant tetracycline base or calcium tetracycline when used orally in such form that it is converted in situ in the stomach to the hydrochloride. As regards the phosphate ions, the inventors prefer a hexametaphosphate, e.g. sodium hexametaphosphate, calcium hexametaphosphate and mixtures thereof, used in the range of 0.2 to 2.0 times the weight of the tetracycline salts.

The patent says that the compositions can be used for oral application in powder form, as tablets or in capsules, but they may also be used in suspensions and aqueous liquids or in anhydrous, edible oils, such as peanut oil, or in aqueous emulsions of such oils. Parenteral use, according to the

*Richards and Cifelli, Newark, New Jersey

patent, may also be made of certain of these products. The patented compositions can be used in conjunction with many other pharmaceutical compatible materials according to the following statement taken from the patent:

When desired for specific purposes and rendered pharmaceutically compatible, there may be admixed with the combinations of the present invention various other additional medicaments such as antihistamines, sulfa drugs (e.g. sulfadiazine, sulfabenzamide, sulfacetamide, sulfanilamide, sulfapyridine, sulfathiazole, sulfapyrazine, sulfaguanidine, sulfathalidine, sulfasuxidine, sulfisoxazole, sulfamylon, phthalysulfacetamide, N′-3,4-dimethylbenzoylsulfanilamide, benzylsulfanilamide and N′-2-(2-quinoxalyl)-sulfanilamide), lipotropic agents (particularly methionine, choline, inositol and beta-sitosterol and mixtures thereof), stimulants of the central nervous system (e.g. caffeine, amphetamines), local anesthetics, analgesics (e.g. aspirin, salicylamide, sodium gentisate, p-acetylaminophenol, phenacetin, codeine), laxatives (e.g. phenolphthalein), sedatives (e.g. barbiturates, bromides), salts of penicillin (e.g. potassium penicillin G, procaine penicillin G, l-ephenamine penicillin G, dibenzylamine penicillin G, and salts disclosed by U.S. Patent 2,627,491: these combinations are particularly useful to enable variations of the pattern of blood levels obtained), phenoxymethylpenicillin and salts thereof, other antibiotic agents (e.g. streptomycin, dihydrostreptomycin, bacitracin, polymyxin, tyrothricin, erythromycin, Aureomycin, Terramycin, oleandomycin, chloramphenicol, magnamycin, novobiocin, cycloserine; in some cases such combinations attack a wider range of organisms or show synergistic efficacy or provide decreased toxicity with equal efficacy), vitamins (e.g. vitamins A, A_1, B_1, B_2, B_6, B_{12} and members of that family, folic acid and members of that family, vitamins C, D_2, D_3 and E), hormones (e.g. cortisone, hydrocortisone, 9α-fluorocortisone, 9α-fluorohydrocortisone, prednisone and prednisolone), anabolic agents (e.g. 11,17-dihydroxy-9α-fluoro-17α-methyl-4-androsten-3-one; 17-α-ethyl-19-nortestosterone) and antifungal agents (e.g. mycostatin).

Details of the preparation of a mixture in accordance with the patent are given below.

Eighty grams of sodium hexametaphosphate (Calgon) was dissolved in about 1600 ml. water and the pH was adjusted to 1.5 with hydrochloric acid; this solution was then added with stirring to a solution of 240 g. tetracycline hydrochloride in 2.4 liters water (100 mgm./ml.). After some tetracycline sodium hexametaphosphate complex formed as a gum, the solution was decanted and seeded to produce crystalline tetracycline sodium hexametaphosphate complex (178 g.) after stirring two hours, collecting by filtration and washing thoroughly with water and then methanol. An additional 21 g. crystalline product was obtained from the gum by stirring it in water with seed crystals. The product gave the following analyses after correction for the presence of 8.4 per cent water (Karl Fischer): Tetracycline hydrochloride equivalents in meg./-mgm.: 763 (bio-assay); 815 (ultraviolet assay); sodium 1.0 per cent, phosphorus, 6.1 per cent. The presence of one, or perhaps two, molecules of water of hydration was indicated by the value of 7.3 per cent moisture found by the vacuum oven technique.

Theory for 5 tetracycline. $Na-PO_35HPO_3$ is potency 880, 0.85 per cent sodium and 6.8 per cent phosphorus.

An example showing the preparation of a therapeutic dose and results obtained by the administration of this dose to dogs is given below as taken from the patent.

A mixture of equal parts by weight of tetracycline hydrochloride and sodium hexametaphosphate (Calgon) was prepared, filled into capsules and administered orally in signle dosage to dogs to provide a dose of 12.5 milligrams tetracycline hydrochloride per kilogram. Determination of the blood levels at various times after the administration of this single dose gave the following results:

Dog	Blood Levels in mcg./ml. Hours after Administration			
	0	1	4	24
365	NR	6.25	3.71	.26
380	NR	2.00	1.37	NR
385	NR	NR	.66	NR
412	NR	NR	.67	NR
		2.06	1.60	.065

NR indicates no reading, i.e., no activity.

Administration of 12.5 mg. tetracycline hydrochloride per kilogram without the added sodium hexametaphosphate to nine dogs gave average blood levels in mcg./ml. of 0.77-0.92 after one hour and about 0.75 after four hours. It is apparent that this composition, which is the preferred embodiment of the present invention, gave results far superior to those obtained with the ordinary tetracycline hydrochloride capsules.

There are no clinical data showing the results obtained from human beings, insofar as the patent itself reveals. However, it is understood that in the prosecution of the patent application leading up to the issuance of the patent such data were submitted and assertedly show that blood levels were nearly doubled. Also believed to be of interest is the following quotation taken from the remarks by counsel for the patent applicants during the course of prosecution: "Applicants' present data indicate that blood levels of parenteral tetracycline products are not improved by the addition of applicants' particular phosphate." Since oral administration is normally the preferred route, the situation indicated by the quoted statement does not appear to have great practical significance.

Nobel Prize Winner Beats U. S. Income Tax

The name of Paul Karrer, one of the world's leading organic chemists, is doubtless known to many outside the field of chemistry, as he won the Nobel Prize in 1937 for his work in the field of synthetic vitamins structure. His chemical researches have taken him into many fields besides vitamins. He also has been for a long time Professor of Chemistry at the University of Zurich, Switzerland, where he is also the Director of the Chemical Institute. In addition to all of these time-consuming tasks, Professor Karrer has taken time out to write his well-known standard text on organic chemistry.

One might think that just the matters noted here would be more than a full time operation for one person. However, Professor Karrer has no such limitations. It now appears that Professor Karrer's accomplishments include ability to obtain rather large sums of money from the U.S. legally free of the U.S. income tax laws! On May 8, 1957, the Court of Claims of the U.S. held that Professor Karrer was entitled to the return of $201,504.88, together with interest, paid by and on his behalf during 1941-46.

(*Continued on page 126*)

ONLY Continental GIVES YOU AN EXCLUSIVE LINE OF SIX DOME-TOPPED AEROSOLS

WITH SALES OF AEROSOLS expected to hit 600,000,000 by 1960 (about twice 1956 production), you can see the immediate expansion that lies ahead for every aerosol user. Of all suppliers, Continental is best equipped to meet your growing demands, for two reasons. First, Continental offers the most complete line of aerosol sizes. Second, Continental has greatly increased aerosol production facilities. We're ready to deliver all the aerosols you need, any size, any time, anywhere, from plants across the U.S.

Whatever your product—insecticide or shaving cream, air freshener or hair lacquer—Continental aerosols are tailor-made for you, lithographed with your design by Continental craftsmen. Engineering and research services are also available, as well as introductions to valve suppliers and commercial fillers. You can fill all your container needs *with one order* to save on shipping and handling costs.

QUALITY Continental SERVICE

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

Cash in on the huge demand for AEROSOLS... call Continental TODAY!

OWENS-ILLINOIS ASSURES YOU A

Co-ordinated Research

Pure research into formulae and fabrication of glass, *packaging research* into processing and handling methods in customer plants, and *market research* into consumer attitudes, add up to greater specific value for your packaging dollar.

Engineered Design

The package that takes your product to market must take *three* needs into account. Considerations of its function in the retail store, its operating efficiency and its consumer utility all become a part of the prescription for an Owens-Illinois package.

The Right Container

Versatility of facilities and talents points to Owens-Illinois as your best source of supply for a wide range of specialized needs: containers where beauty, utility and tradition are blended in the proportions required by different product classifications.

Meet a couple of

COMPLETE PACKAGING APPROACH

The Right Closure

Know-how as to the best available liner and closure—best for packing, displaying, or using a specific product—may well be one of the most important single points through which expert packaging counsel will reward you many times over.

Needed Fitments

With emphasis on the word "needed," Owens-Illinois specialists are keenly aware of sales benefits possible through use of plastic shaker and pour-out fitments which are not "gadgets" but which increase consumer satisfaction with your product.

Merchandising Cartons

Modern cartons are developed only through systematic consideration of their opportunity to serve you in the retail store and retail warehouse as well as on your own filling line and in transit. Owens-Illinois is pioneering such developments.

beautiful sales ideas!

Your special products are sure to get more attention, more sales in containers like these! Custom-made for you by Owens-Illinois

A container that matches the appearance and convenience of these Owens-Illinois custom designs *is a sales idea in every sense of the word!*

Handsomely formed, such a container draws the customer's eye—quickly creates a favorable over-all impression—makes a strong promise for the character and quality you have given your product. *Intelligently designed,* it makes your product easy to use, keeps it fresh from first use to last—and thereby aids measurably in building repeat sales.

Such containers have long been a specialty at Owens-Illinois . . . developed for packagers by the experienced designers and packaging experts that staff the O-I Container Design Service.

So whether you need a custom-designed container or help in the selection of a stock mold—call on Owens-Illinois. Here, you have a marketing-minded supplier for your complete salespackage—from glass container, through fitments and closures, to the final carton.

DURAGLAS CONTAINERS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

THE POPULAR

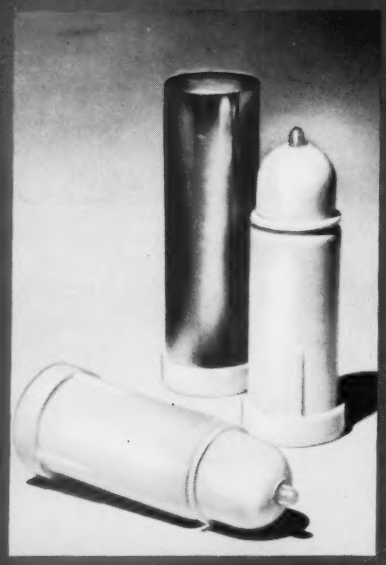
is NOW AVAILABLE IN
A LARGER SIZE
because you asked for it!!!

RICHFORD TOUCH-N-FLO*

PURSE DISPENSER

* U. S. PATENT

the 18 mm. TOUCH-N-FLO with our new Victoria Bottle.



So dramatically successful in its small plastic container style with gold-metal cap.

And so practical in a glass bottle with slip-on brass cap version.

the NEW 18 mm. TOUCH-N-FLO fits *any* Bottle *with* 18/410 *Neck*. *Write now for samples and prices.*

Touch-n-Flo is ideal for cream perfumes or cream sachets, powder, liquid soaps, lotions, and deodorants — contents always flow with a touch, yet never leak.

RICHFORD CORPORATION

OFFICE & PLANT: 3618 OCEANSIDE RD., OCEANSIDE, N. Y.
SHOW ROOMS: 350 FIFTH AVE., NEW YORK

for PACKAGING APPEAL

where it counts most...
get glass containers by KNOX

That short trip from shelf to shopping basket is the most important distance your product travels. Nowadays buying is seldom done leisurely. For that reason alone... appeal at the point of sale is imperative.

A distinctive glass container shows its contents to the best advantage, and promotes that impulse to buy.

At Knox... imagination in design, combined with over 40 years of manufacturing experience, results in glass container craftsmanship that helps send your product home with the customer.

To solve packaging problems and for your glass container needs, call the Knox representative nearest you. Or contact:

KNOX GLASS, INC.

KNOX, PENNSYLVANIA • JACKSON, MISSISSIPPI

7 Plants • 14 Warehouses • Sales Offices in 34 Principal Cities

Glass packaging with a flair for the future

Manufacturers of quality glass containers for: Foods • Drugs • Cosmetics • Beer • Carbonated Beverages • Dairy Products • Liquor

New Perfection

DROPPING PARTS

Simplify Your Packaging Problem

#1

Non-rolling, extra-depth, Bakelite cap; thick-flange rubber bulb; Saftee-ball glass.

#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.

#4

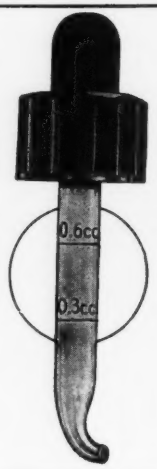
Metal cap; oil - resistant AMEKINE synthetic rubber bulb; blunt glass.

New Modernistic bottle. Designed to lie flat for convenient labeling. Oval front provides ample label space.

The wide variety of sizes, styles and colors in New Perfection's complete line of dropping parts offers the answer to your packaging problem. Each component part is designed to present and administer your product in the most attractive, convenient manner. We supply dropping parts to fit your bottles or furnish the complete unit.

DROPPER GLASSES CAN BE CALIBRATED IN COLOR

An inexpensive extra that adds great convenience to the use of your preparation. The dosage you desire in the color you specify is accurately and permanently printed on the dropper glass. Trade-marks and firm names can also be imprinted.



#2

Non-rolling, extra-depth Bakelite cap; thick-flange rubber bulb; special bent glass, plain or CALIBRATED.

RUBBER BULBS are supplied in many styles and colors. Oil-resisting AMEKINE synthetic rubber is used for oil preparations; natural rubber is supplied for other products.

CAPS of plastic or metal can be furnished in a complete range of sizes and colors.

DROPPER GLASSES are available in a wide variety of styles and sizes; plain or CALIBRATED in any color to mark specific dosages.

BOTTLES in an attractive modernistic style in Amber, Blue, Green or Clear glass are available, with dropping parts, in the following sizes: 1/8, 1/4, 1/2, 1 and 2 oz.

Write for Samples and Quotations

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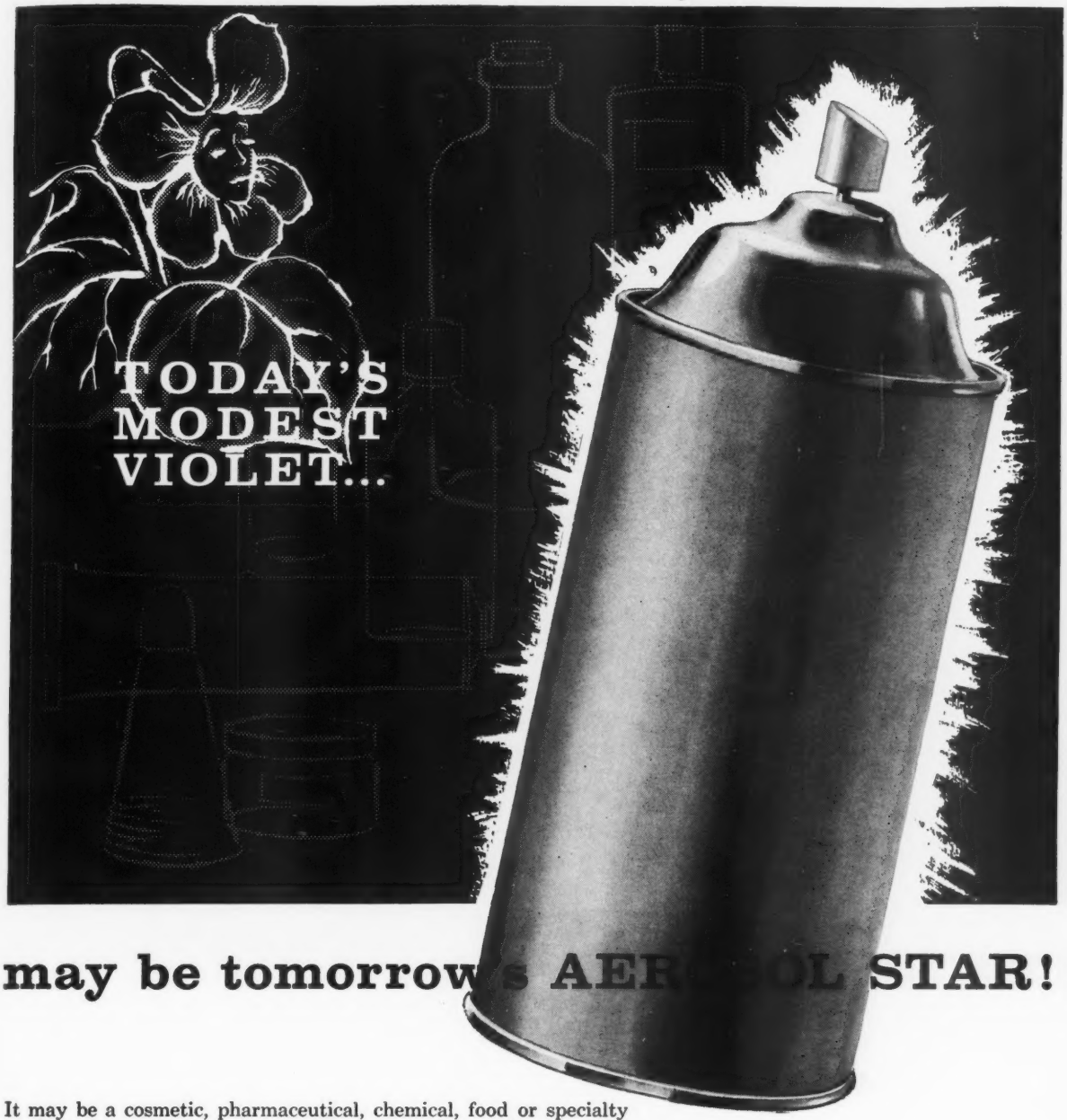
"Glass Goods of the Better Kind"

430 N. CRAIG ST. • PITTSBURGH (13), PA., U.S.A.

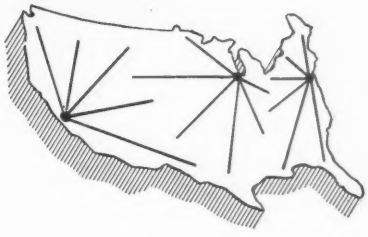


may be tomorrow's AER[illegible]OL STAR!

It may be a cosmetic, pharmaceutical, chemical, food or specialty product. It may be a powder, liquid, or cream. It may be one of the regular products in your line. Perhaps it is an undeveloped formula or the mere "germ of an idea" in some person's mind. But the odds are that some product that is today unspectacular in its present package, may become one of tomorrow's fastest selling items when packaged as an *aerosol*.

Today in G. Barr & Company's laboratories, a continuing program of imaginative and persistent research is being carried on. All focused upon the development of new and better aerosol products and in further perfecting the Private Label aerosols we now manufacture.

We will be pleased to make available to you, the facilities and experience we have gained as America's leading Private Label Aerosol producers, to help you ascertain whether your idea, undeveloped formula or present product has an aerosol potential.



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strategically located plants:
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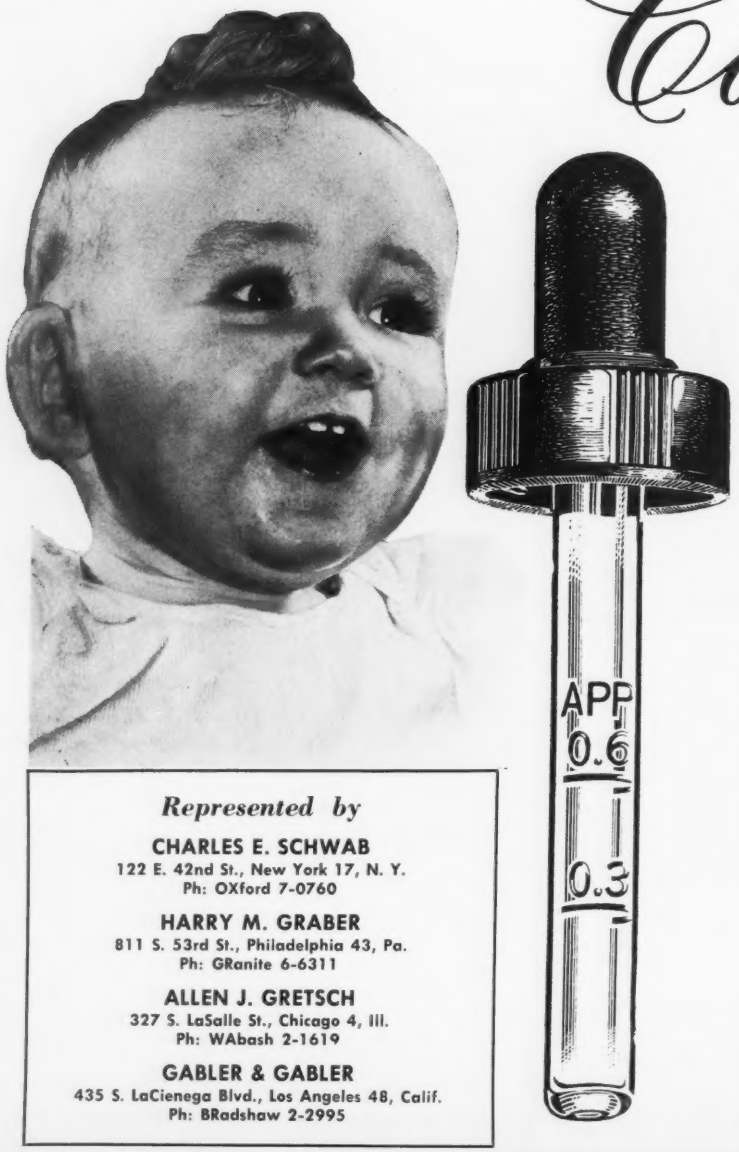
Q.F. In Droppers and Dropper Assemblies

by

Colonial



THE "QUALITY FACTOR" (Q.F.) plays a key role in operations at Colonial Applicator Company. The nation's mothers insist upon the finest in materials and products for their babies. We only wish it were possible to tell these hundreds of thousands of mothers about Colonial's quality control program that turns out millions of droppers and assemblies to meet the most exacting standards.

At Colonial there is rigid insistence upon the finest materials—carefully screened on arrival by an alert inspection program. Each machine on Colonial's production line is engineered to perform a specific task. Each is production-tested to turn out droppers to exacting specifications. Component parts of the dropper assemblies are assembled by skilled, careful workers.

Be sure your product receives the very finest "showcase" that men and machines can produce. Insist upon Colonial droppers and dropper assemblies. Let us make free samples to your exact specifications. Contact our representatives listed at left, or write direct.

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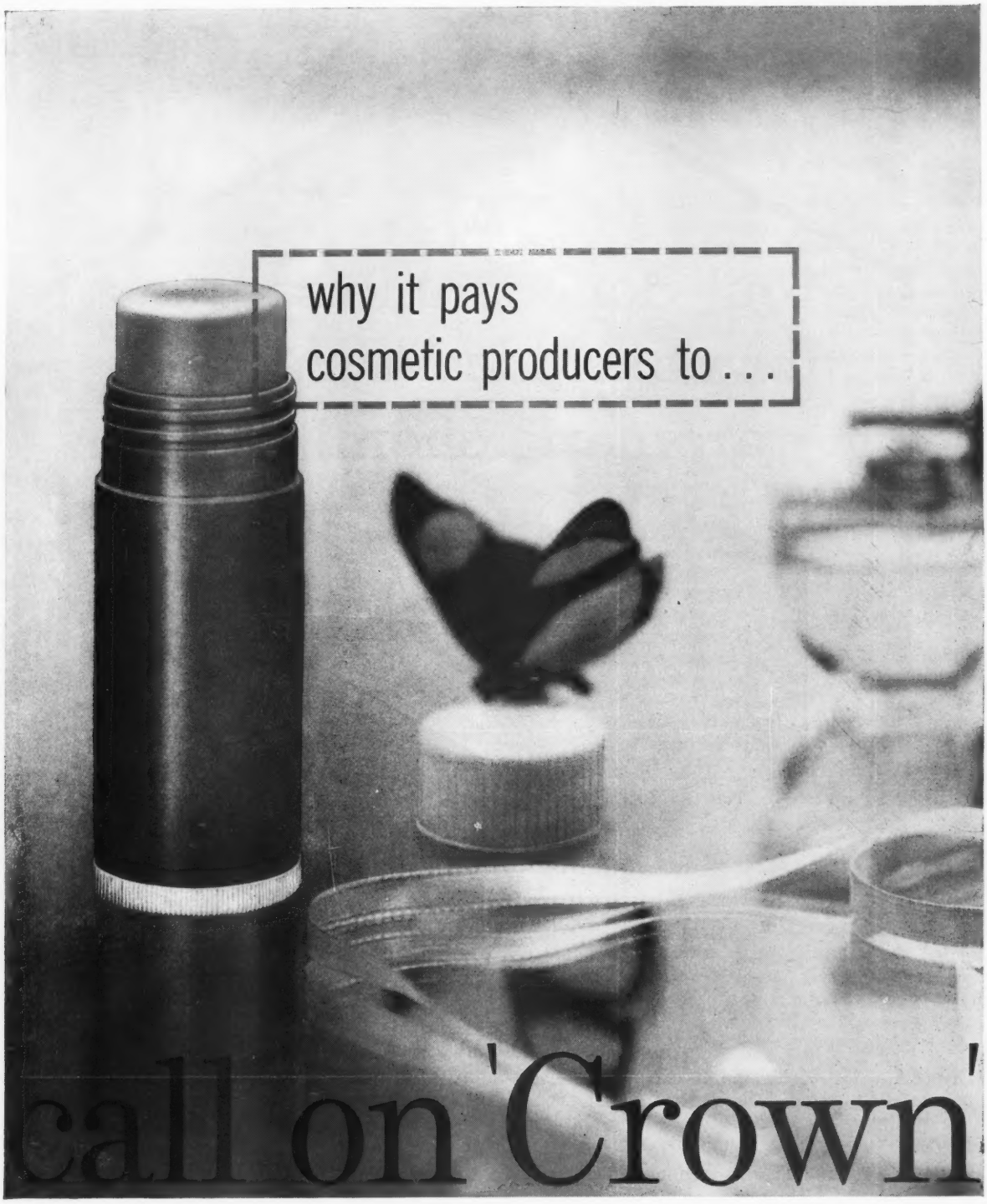
Ph: WAbash 2-1619

GABLER & GABLER
435 S. LaCienega Blvd., Los Angeles 48, Calif.
Ph: BRadshaw 2-2995

COLONIAL APPLICATOR CO.
VINELAND, NEW JERSEY



They want and *get* a new twist in packaging. Crown's plastic Seal-Stik, for example, is an eye-catching and easy-to-work container for colognes and deodorants. It closes tight to preserve product quality on the shelf as well as in pocket or purse. It is giving dozens of products extra sales advantages at the point-of-sale.

Crown's broad experience in packaging . . . in equipment for filling and closing glass, metal and plastic containers . . . combine to provide *packaging service* that pays real dividends when you . . . *call on Crown.*

CROWN CORK & SEAL COMPANY, INC., BALTIMORE 3, MARYLAND

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Your dependable source for pharmaceutical and aromatic chemicals

- Salicylic Acid and Salicylates
- Parasepts®
- Benzoic Acid and Benzoates
- Benzaldehydes
- Benzyl Chlorides
- Chlorinated Toluene Derivatives
- Hexamethylenetetramine
- Medicinal Creosotes and Guaiacols
- Medicinal Colloids

® *para-Hydroxybenzoic Acid Esters*

- Menthol
- Menthone
- Thymol
- Camphor
- Anethol
- Terpene Alcohol Acetates

One of America's leading producers of pharmaceutical chemicals, Heyden Newport can assure you of the quality and quantity – in the form and grade to meet your particular requirements.

Heyden Newport chemicals are found in a long line of familiar products – serving as analgesics and antipyretics; counter-irritants in liniments and ointments; preservatives; flavoring agents in toothpastes, confectionaries and tobaccos; perfume ingredients and intermediates; and sun-screening agents for suntan lotions and creams – to name a few.

Heyden Newport offers industry a single and dependable source of supply for a wide line of intermediates for pharmaceuticals and cosmetics. Our sales and technical staffs are at your service. 4321

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NEWS...

Glycerine Research Awards

Nominations for the sixth annual Glycerine Research Awards are now being accepted by the Awards Committee of the Glycerine Producers' Association. The awards were established to recognize and encourage research leading to new and improved applications of glycerine or glycerine derivatives to products and processes. Originality in extending the use of glycerine to new fields, either consumer or industrial, receive special consideration.

A bulletin giving complete details on the 1957 awards may be obtained by writing to the Glycerine Producers' Association, 295 Madison Avenue, New York 17.

Hon. D. Sc. to Scheele

Dr. Leonard A. Scheele, former United States Surgeon General and now president of the Warner-Chilcott Laboratories, received the honorary degree of Doctor of Science at Commencement Exercises of St. John's University.

Toni Appoints Goff

S. R. Goff has been appointed co-ordinator of product development for The Toni Company, it has been announced by Raymond E. Reed, vice-president of technical operations. Mr. Goff, formerly non-waving research director, will serve as co-ordinator of all technical programs concerning new products.

PAUL GREGORY

IVAN L. ANTAL

Bard Chief Control Chemist

I. L. Antal, Ph.D. has been named chief control chemist for Bard Pharmaceuticals, Inc., Robert H. Broh-Kahn, M.D., president, has announced.

Warner-Lambert Promotions

Promotion of George P. Maginness to the executive staff of Warner-Lambert Pharmaceutical Company as director of personnel and public relations, has been announced by Stanley S. Lasdon, vice-president.

Other staff promotions announced by Mr. Lasdon are those of Russell E. Burke, who will become manager of administration and personnel for Warner Lambert's International Division; Robert L. Gardiner, who advances from the position of personnel manager for Warner-Chilcott Laboratories to that of manager of personnel administration for the parent company, and John A. Baruch, who becomes supervisor of public relations for Warner-Lambert. Mr. Baruch was formerly supervisor of public relations of the Ethical Drug Division of Warner-Chilcott.

Avon Vice-Presidents

Paul Gregory has been named vice-president in charge of field operations for Avon Products, Inc., and Riley Denny, vice-president in charge of branch operations. Both are new posts.

Mr. Gregory joined Avon's Kansas City office in 1934, became division manager at the Pasadena office in 1939, and, in 1945, was transferred to the New York office as national district sales manager. Three years ago he became director of field operations.

Mr. Denny joined Avon in the Kansas City office in 1936, transferred to the New York office in 1941, as assistant sales manager, was appointed sales manager in 1943, director of branch operations in 1955.

Nationwide Sales Network Of Cheesebrough-Pond's Inc.

Details of Chesebrough-Pond's Inc.'s nationwide sales staff expansion and reorganization have been disclosed by Edward D. Lane, vice-president in charge of sales.

Expansion of the company's nationwide sales force was completed in time for Chesebrough-Pond's to begin distribution and promotion of its "Vaseline" brand products on July 1. Prior to that time the Chesebrough-Pond's sales organization had distributed only "Pond's" products and "Pertussin," the "Vaseline" brand products having been distributed domestically by the Colgate-Palmolive Company in accordance with a sales agreement made between Robert Augustus Chesebrough and Samuel Colgate in 1873.

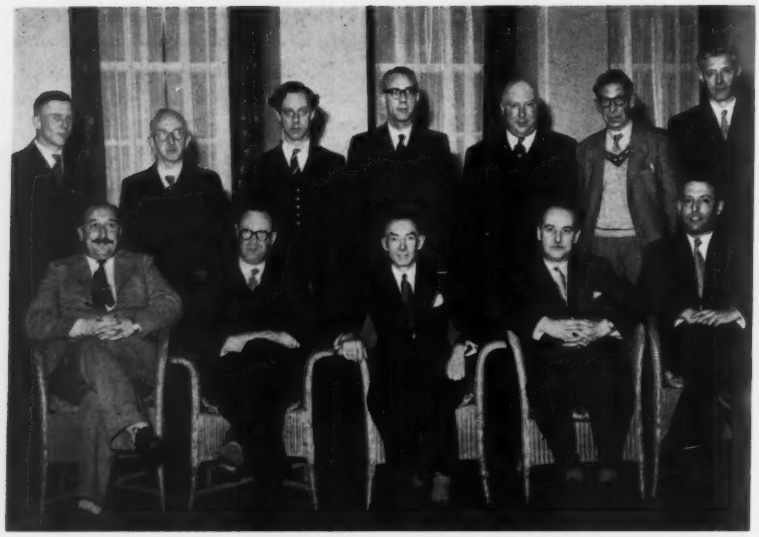
Warehousing and shipping arrangements previously handled by Colgate-Palmolive Company on "Vaseline" brand products are running smoothly through the facilities of the former Pond's Extract Company which merged with Chesebrough Manufacturing Company Consolidated in 1955, Mr. Lane said.

Frank H. Orr is general sales manager and the nationwise sales force is being directed in the field through two regional managers, four division managers, and eight area supervisors.

Parke-Davis Appointments

Dr. E. C. Vonder Heide has been appointed medical consultant in the Research Division of Parke-Davis, and Dr. J. K. Weston has been named director of the clinical investigation department, according to Dr. Leon A. Sweet, vice-president and director of research for the firm. Dr. Sweet said Dr. Vonder Heide also will direct the pharmaceutical firm's Anemia Research Laboratories at Harper Hospital, Detroit.

RILEY DENNY



Officers and members of council elected at the annual meeting of the Society of Cosmetic Chemists of Great Britain. Seated, left to right, are F. Riley, hon. secretary; Dr. A. W. Middleton, vice-president; J. Pickthall, president; R. T. Dobson, retiring president; and R. E. Spate, hon. treasurer. Standing, left to right, are members of council: Dr. H. W. Hibbott, Dr. W. W. Myddleton, P. G. Gugenheim, Dr. W. Mitchell, Mr. Littlejohn, E. Polan, and G. A. Pitt.

ALFRED T. ZODDA

Olin Mathieson Vice-Pres.

Alfred T. Zodda has been appointed vice-president-operations for Olin Mathieson International Corporation, Henry Arnold, president, has announced.

Mr. Zodda, who will be responsible for all overseas operations of the corporation, had been general manager of Squibb International division.

SKF Res. Div. Asst. Mgr.

S. Stoney Simons has been appointed assistant manager of Smith, Kline & French Laboratories Research and Development Division. Creation of this position was necessitated by the growth of the division in the last two years, said W. Furness Thompson, vice-president of the division.

Mr. Simons, who has been at SKF since October, 1946, will have direct responsibility for the division's administrative department, science information department, and animal health products department.

Naves Back in Switzerland

Dr. Yves-Rene Naves, director of research of L. Givaudan & Cie, S.A., is back in Vernier-Geneva, Switzerland, after a two week visit to the U. S.

DR. YVES-RENE NAVES

Carbide Chemicals Reassigns

G. E. Kuehn, previously Buffalo district manager of Union Carbide Chemicals Company, is the new manager for the Detroit district. Julian Paul, previously assistant manager of the Boston district, has been promoted to manager for the Baltimore district. D. F. Swartz, previously Baltimore district manager, is the new manager for the Buffalo district.

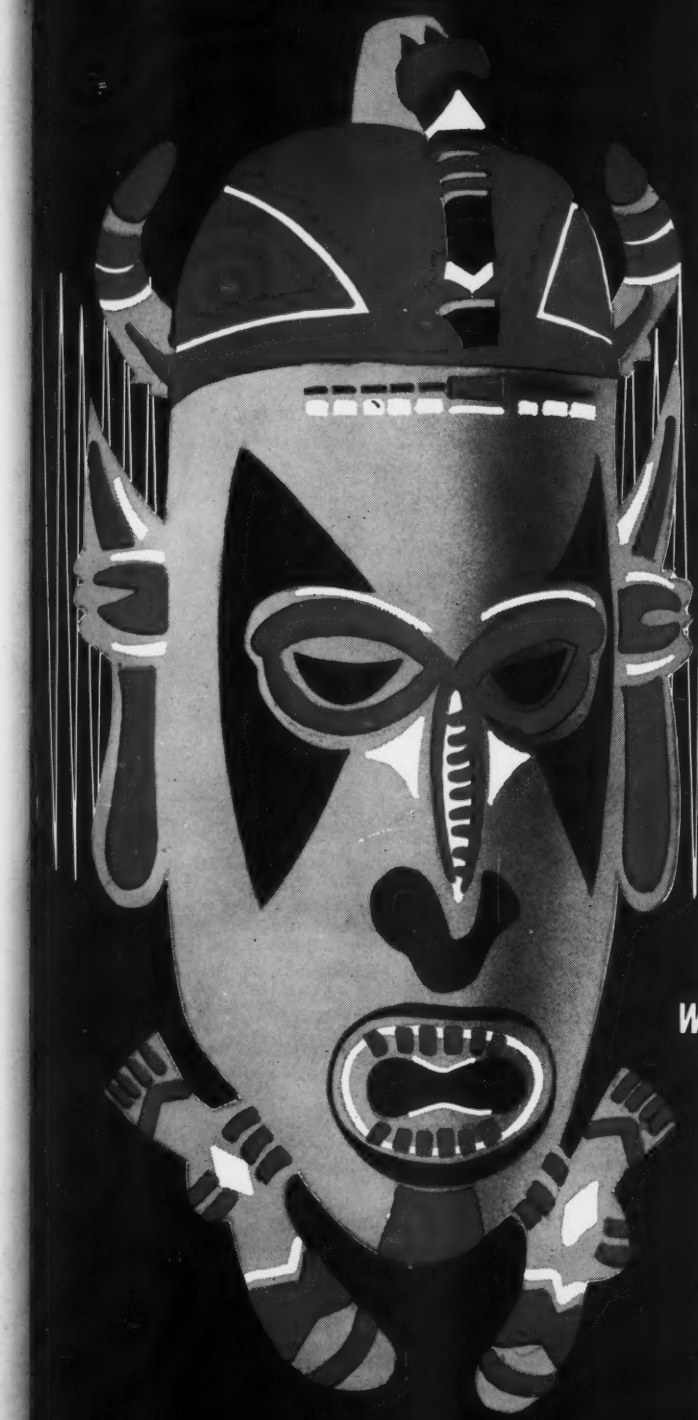
Humphreys Sales Manager

Larry C. Gomez has been named sales manager of the Humphrey's Medicine Company, Suzanne Humphreys de Florez, president, has announced.

MacVeagh Resigns

Charlton MacVeagh has resigned as director, vice-chairman of the board and treasurer of Mallinckrodt Chemical Works.

Company executives photographed during a break in the recent Bourjois national sales meeting at the Statler Hotel in New York City meeting are, left to right, Lewis F. Bonham, president; Frank X. Patrey, vice-president; Janet Myers, publicity director; Henry O. Dow, vice-president; Joseph S. Keating, national field sales manager, and Joseph Lawrence, advertising manager.



WAVEMASK 30

works magic with home permanents

The new Synfleur fragrance WAVEMASK 30 can help cure even your most difficult case in home permanent formulation.

WAVEMASK 30, based on essential oils and aromatic chemicals, carefully tested for stability, compatibility and solubility, is an artistic formulation developed out of long and intensive Synfleur research.

In practical application, it has proven itself as practically a panacea to cold wave preparation odor problems. Additionally, it can be adapted as a basic fragrance for effective use in other thioglycolate products requiring similar masking treatment.

The Synfleur laboratories staff will be glad to assist you on your masking problems with samples, data or other help, without obligation.

Synfleur

SCIENTIFIC LABORATORIES, INC.
MONTICELLO, N. Y.

ATLANTA • DETROIT • LOS ANGELES • NEW YORK • SAN FRANCISCO • MEXICO, D. F. • HAVANA • MONTREAL • Guatemala City • San Salvador • San Pedro Sula
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LOOK at the sales advantages offered your product by G-11®

(Hexachlorophene U.S.P.)

The market for products containing G-11 is an established, growing market with virtually unlimited opportunities for profitable development.

Few products have ever been studied so exhaustively and given such unanimous acclaim by authorities. G-11 is recognized as the proven, effective and non-irritating antiseptic chemical that offers outstanding hygienic and deodorizing advantages.

Years of safe, successful use by millions of people assure the continued success of your products containing G-11.

As the originator and producer of G-11, Sindar offers you the benefits of its scientific knowledge, practical marketing experience and technical service in using it to the best advantage in your soaps, detergents and cosmetics.

Bulletins are available on:

- **Physical and Chemical Properties**
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Industrial Aromatics and Chemicals

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Branches: Philadelphia • Boston • Cincinnati
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DR. OTTO JACOBI

Dr. Jacobi To Address Dermatology Congress

Dr. Otto Jacobi, vice-president and director of research of Kolmar Laboratories, has been invited by the XI. International Congress of Dermatology, being held in Sweden this month, to give a paper entitled "Methods for Testing the Effect on the Skin of Detergents."

Dr. Jacobi plans to attend other scientific meetings on the Continent and will visit Kolmar's foreign operations in Paris; Offenbach, Germany and London, England.

Stepan Chemical's 25th Year

July marks the 25th Anniversary of the Stepan Chemical Company, which was founded in 1932 by Alfred C. Stepan Jr. Starting with its own brand of synthetic hand cleaners for industrial use the firm has expanded to become one of the nation's largest suppliers of synthetic detergent raw materials.

Miss Janet Corrigan of Huntington, Long Island, who is Miss New York State in the forthcoming Miss America Beauty Pageant, cuts the ribbon as she welcomes Luzier's, Inc. to Hempstead, Long Island, at the opening ceremonies of the firm's first branch office in New York State. She is assisted by Hempstead's Mayor William O. Gulde and John M. Phyfe, vice-president in charge of sales of Luzier's.

A. L. van Ameringen Named to Menninger Board

A. L. van Ameringen, chairman of the board of van Ameringen-Haebler, Inc., has been named to the Board of Governors of The Menninger Foundation, Dr. William C. Menninger has announced.

Mr. van Ameringen, former treasurer and member of the executive committee of the National Association for Mental Health, joins a group of nearly 100 business and professional leaders who are assisting with the development of the non-profit psychiatric center.

Form Purdue Frederick Int'l

The Purdue Frederick Company International, Inc., has been organized to develop markets abroad for the ethical drug products of The Purdue Frederick Company.

The new firm will begin immediately to set up distribution of various Purdue Frederick products, including Senokot, Pre-Mens, Somatovite, and Sippyplex. The number of products is expected to be increased as new drugs, currently being evaluated by the medical department, become available.

Joel Youkeles has been named export manager of the firm; Dr. Mario C. Lasserre, medical director; Dr. Marcos Pedrosa, advertising manager.

Mr. Youkeles formerly was associated with the export department of the Nepera Chemical Company, Inc. Dr. Pedrosa formerly was associated with Merck, Sharp and Dohme, International. Home offices of the new firm have been established at 24 West 30 Street, New York 1.

Kronish on Extended Vacation

Advised by his physician to take a vacation and rest for from six months to a year, Louis Kronish, who has been in the cosmetic industry for more than 40 years and president of V. Strand Cosmetic Company for the past twenty years, left June 26 for Florida, accompanied by his wife.

Luzier's Opens East Branches

Luzier's, Incorporated has opened its first branch offices in the East. One is in Newark at 744 Broad Street; the other is in Hempstead, Long Island, at 320 Fulton Avenue. Miss Rosemary Whelen of Teaneck, N. J., is in charge of the Newark office and Mrs. Josephine L. Webster of Hempstead is district manager of the Hempstead branch office.

Mrs. Harry Ushiyama, who writes for Movie Pictorial and is owner of the Hollywood Beauty Salon and the Hollywood Beauty School, and her husband, right, owner of the Hollywood Cosmetic Company, are seen with Frazer V. Sinclair, editor of Beauty Fashion.

Roerig Moves to New York

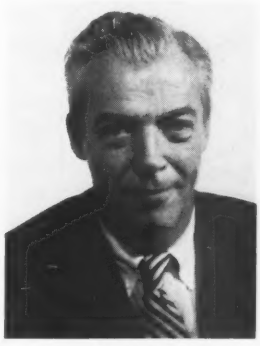
J. B. Roerig and Company closed its home office in Chicago Friday, June 21, and resumed business Monday morning, June 24, in a new building at 800 Second Avenue, New York.

Roerig was established in Chicago in 1932, and incorporated in Illinois in 1937. Pfizer purchased the outstanding stock of the firm in 1953, when net sales were slightly under $6,000,000. Net sales of the division were reported at nearly $11,000,000 last year.

The entire executive staff and their families are relocated in New York City and nearby Westchester and New Jersey suburbs, Arthur C. Emelin, general manager, has disclosed. Mr. Emelin said no changes will be made in the division's sales force of some 250 representatives and field managers

Edwin Hay Joins P&S

Edwin P. Hay has joined Polak & Schwarz, Inc. as a sales representative for perfuming compounds, essential oils and aromatic chemicals. He was previously with General Aniline and Film Corporation as a sales representative for PVP.



EDWIN P. HAY

Perfumer's Notes

ON A FEW VERONA SPECIALTIES

ISO-BUTYL FURYL PROPIONATE — A top note of freshness and fine aroma for perfumes. Also used in flavors as an addition to Pineapple, because of its characteristic aroma and freshness.

ALPHA-METHYL CINNAMIC ALDEHYDE — A base for synthetic Oil of Cassia, to which it adds softness and stability.

CYCLAMAL® — Stable in perfumery. Will not discolor or irritate in cosmetics and soaps. Used up to 5% in perfume bouquets for its Lily of the Valley-Muguet character. The exceptional purity of Verona Cyclamal makes it outstanding for its clean, fresh aroma, free from fuzzy by-notes.

FLORANOL — A chemical with a soft, slightly fruity Rose note, but with considerable power and stability.

Write for further information.
Investigate these additional VERONA specialties:

CYCLAMAL CYCLO ACETAL • DIMETHYL OCTANOL SPECIAL
RESEDALIA • VERONOL • ROSANOL

Sole representative in the United States for J. & E. Sozio, Grasse, France.

Resinoides Essential Oils Natural Absolutes

Write us for our complete list of specialties and other aromatic chemicals.

PRODUCTS BUILD SALES FOR *Your* PRODUCTS

Aromatics Division

VERONA CHEMICAL COMPANY

Plant and Main Office: 26 Verona Avenue, Newark, N. J.
1210 Rosedale Avenue, Chicago, Ill.

Merrell Sales Manager

Philip Ritter III has been named sales manager of The Wm. S. Merrell Company, according to Frank T. Jacobs, vice-president in charge of marketing. Mr. Ritter, who has assumed his new responsibilities under the title of promotion and sales manager, was formerly director of promotion and advertising for Merrell. In his new capacity, he will undertake over-all responsibility for the functioning of the advertising, sales promotion and sales departments.

Robert C. Gaines has been promoted to training and assistant sales manager. He will be in charge of Merrell's training program for pharmaceutical representatives, and will also assist Mr. Ritter in the over-all administration of the sales department.

Colton N.Y. Sales Engineer

Gerard W. Kohler has been appointed sales engineer in the New York district office of Arthur Colton Company, according to W. A. Doepel, sales manager. A former War Assets Administration machinery pricing consultant and industrial salesman, Mr. Kohler will headquarter in the Colton office at 303 Fifth Avenue, New York 16.

GERARD W. KOHLER

V.P. of Canadian Schering

Mitchell Chadrjian has been appointed vice-president of Schering Corporation Ltd., Canada, according to Francis C. Brown, president of the parent company, Schering Corporation.

Mr. Chadrjian will succeed Francis J. Gleason who has been named to an important position with Schering's Mexican subsidiary. Mr. Chadrjian will be in charge of all operations which include the clinical research, production, sales and shipping of Schering's ethical pharmaceutical line in Canada. The Canadian plant is located in Montreal.

C. Patton Steele, president, American Society of Medical Technologists, presents Mrs. Bernice T. Elert of St. Paul, Minn., with the 1957 Kimble Medical Technology Award, at the annual meeting of the Society at the Palmer House in Chicago. Mrs. Elert, who received the Award and $500 for developing a technique for the use of curare in surgery, bone fractures and electro-shock therapy, is medical technologist at Charles T. Miller Hospital, St. Paul.

Nina, Golden Peacock Merge

Produits Nina, Inc. and Golden Peacock have merged interests, according to an announcement by Mrs. Margery Merrick, president and treasurer of Produits Nina, and Mitchum E. Warren, executive vice-president of Golden Peacock.

Under the arrangement, the nationwide sales staff of Mitchum Division of Golden Peacock will be used by Produits Nina. Mrs. Merrick will remain president and treasurer of Produits Nina, Mr. Warren will become vice-president and W. L. Luckey, secretary-treasurer of Golden Peacock, will become secretary.

Donald M. Robertson, manager of marketing for Merck, Sharp & Dohme and president of the Medical Exhibitors Association, holds a silver-plated, foot long cigarette lighter, the N. Y. Coliseum V.I.P. Award he received during the American Medical Association Convention. With him are Robert J. Lyon, left, AMA advertising manager, and Arthur Smadbeck, president of the Coliseum Exhibition Corporation.

SKF Animal Health Dept.

An animal health products department has been organized at Smith, Kline & French Laboratories. Francis Boyer, president of the company, said the firm's entry into this field is limited at present to a pilot organization and that the new department will be charged with the investigation of SKF products for use in animals.

Dr. Samuel F. Scheidy, V.M.D., Assistant Professor of Clinical Veterinary Medicine at the University of Pennsylvania, joined SKF July 1 as Veterinary Medical Director. A member of the executive board of the American Veterinary Medical Association, Dr. Scheidy has been veterinary medical director of Merck, Sharp & Dohme since 1943.

Wynne to Visit Europe

Walter Wynne, cosmetic chemist of Givaudan-Delawanna, Inc., will leave July 21 for several weeks in Europe where he will visit Givaudan plants in Geneva, Paris and London.

WALTER WYNNE

Mr. Wynne will join the Society of Cosmetic Chemists group touring Europe and will attend the cosmetic seminars to be held in Paris and Geneva, and the international conference on hair in London. He will complete his European business trip August 11 and will then spend a week touring Ireland accompanied by his daughter, Ellen-Alice.

Carbide and Carbon Promotes

D. M. Nielson has been promoted to assistant district manager of the New York sales office and R. H. Rehm has been promoted to assistant district manager of the Newark sales office, according to an announcement by Carbide and Carbon Chemicals Company.

Vitamins in Pharmaceuticals

A REPORT

Use of Biotin in Multivitamin Formulae

Biotin, now firmly established as an important member of the vitamin B complex, belongs in multivitamin formulae and dietary supplements for the reasons given below.

D-biotin is required for the growth of many organisms: animals, plants, bacteria. It appears to be related to the process of cell development. Symptoms of deficiency have been shown to occur in human beings who live on diets high in raw egg white.

Deficiency symptoms appear as severe dermatitis lesions, similar to seborrheic dermatitis and a desquamating disease of infants called Leiner's disease. These symptoms, when due to a deficiency of biotin, disappear after its administration. In animals, dermatitis, loss of hair, cessation of growth of the young and sudden death of the adults may occur.

Nearly 200 papers directly related to biotin research are in the literature. The work of investigation continues.

The evidence now available points to the need for biotin in multivitamin and dietary supplements which, by their very nature, are prescribed for therapeutic and prophylactic effect.

The Place of Biotin in Antibiotic Therapy

Rat feeding experiments using some of the sulfonamides show that the animals develop biotin deficiency. The same result has been found and reported from the use of antibiotics. It has been assumed that the same development might occur in man when this therapy is used. Under the circumstances, biotin should be included in stress formulae and in multivitamin supplements which are prescribed so often during and after the administration of these modern drugs.

Usage in Veterinary Medicine

In dogs and dairy calves it has been found that a deficiency of biotin will cause a paralysis of the hind quarters. This condition was cured by the administration of the vitamin. In chicks and turkey poults a biotin deficiency, represented by a dermatitis of the feet, may be overcome by the use of biotin in the feeding formula. A substantial increase in hatchability was found when hens were fed a ration known to be rich in d-biotin.

This evidence indicates that biotin has a definite place in veterinary medicine and animal nutrition.

Technical Data

Empirical Formula ..... $C_{10}H_{16}O_3N_2S$

Molecular Weight 244.3

Slightly soluble in water and 95% alcohol. Insoluble in ether, acetone and ethyl acetate. Soluble in d-panthenol.

Thermostable in dry crystalline form.

Not sensitive to light.

Not affected by reducing agents that may be present in polyvitamin and other pharmaceutical preparations.

The brilliant Roche synthesis of 1946 makes biotin readily available in pure form at a relatively modest cost.

Roche, a world leader in vitamin research and production, has a wealth of information about biotin. Skilled technical people are ready to help you incorporate biotin 'Roche' in your preparations.

New Edition of Brochure

Send now for your personal copy of the Roche technical brochure about d-biotin. Second edition is now available, complete with survey of recent literature and up-to-date bibliography. Ask your Roche salesman or write the Vitamin Division, without obligation.

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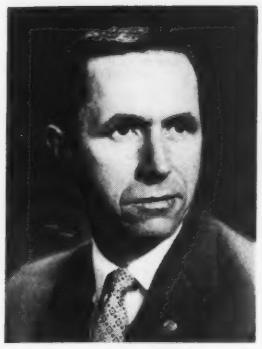


R. S. COWLES

Cowles Replaces Thatcher

R. S. Cowles has been appointed director of quality control at the Squibb Institute for Medical Research, New Brunswick, N. J., replacing the late Raymond L. Thatcher. Mr. Cowles joined Squibb in 1936, has been in the quality control department for fifteen years, four of them as head of chemical control.

Catalin Appointments

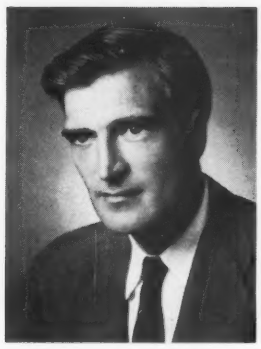
The Chemical Division of Catalin Corporation of America, which has introduced a new bacteriostat, Catalin CS-1, has made four new appointments, further expanding its sales service facilities, according to Harry Krehbiel, president.

Named to the New York office were John Ziecarelli and John J. Egan. Herman Pickles, Jr. was assigned to the Chicago office, and Glenn Nobel will handle sales from the Los Angeles office. Chemicals will be distributed through warehouses located at Kansas City, Los Angeles, and Houston, as well as through Catalin plants at Fords, N. J., Calumet City, Ill., and Thomasville, N. C.

Catalin's bacteriostat, used in low concentration, is said to be highly effective in maintaining a relatively germ-free condition of the skin, and in combatting body odor and complexion faults due to skin bacteria. It is ideally suitable for soaps, deodorants, surgical and veterinary cleansers, shaving cream, shampoo, lotions, antiseptic cream, cosmetics and pharmaceuticals, it is claimed.

Palmer Retires

Robert C. Palmer, vice-president and chemical director of Newport Industries Company, has retired after forty-one years of service, Simon Askin, president of Heyden Newport Chemical Corporation, has announced today.



EDWARD E. LANGENAU

Langenau Is Vice-Pres.

Elected vice-president of Fritzsche Brothers, Inc. is Edward E. Langenau, who joined the firm twenty-one years ago and is director of the firm's analytical laboratory and secretary of its research committee.

Viola Head of New Firm

To manufacture and sell cosmetic preparations to beauty salons, Visom, Inc. has been established, according to Leonard J. Viola, president of the new firm. Director of research and development for Caryl Richards, Inc. from June 1955 to June 1957, Mr. Viola had previously been cosmetic research chemist for the Richard Hudnut Division of Warner-Lambert Pharmaceutical Corporation and research chemist at Alexander Smith Company.

Newton Is Fleet Vice-Pres.

O. B. Newton, Jr., has been named vice-president in addition to his duties as sales manager of C. B. Fleet Co., Inc., Lynchburg, Va., Charles G. Baber, president, has announced.

Mr. Newton joined the Fleet company in 1936 as medical detail representative and served in Michigan and Baltimore-Washington territories until 1945 when he was made sales manager.

Joins Penick Staff

Carroll W. Harding Jr. recently joined the staff of S. B. Penick & Company as a specialist in the sanitizing products department. According to Frank Seeland, vice-president and manager of the department, Mr. Harding will be in charge of sales of Heliogen (R) Diatomic Iodine Sanitizer.

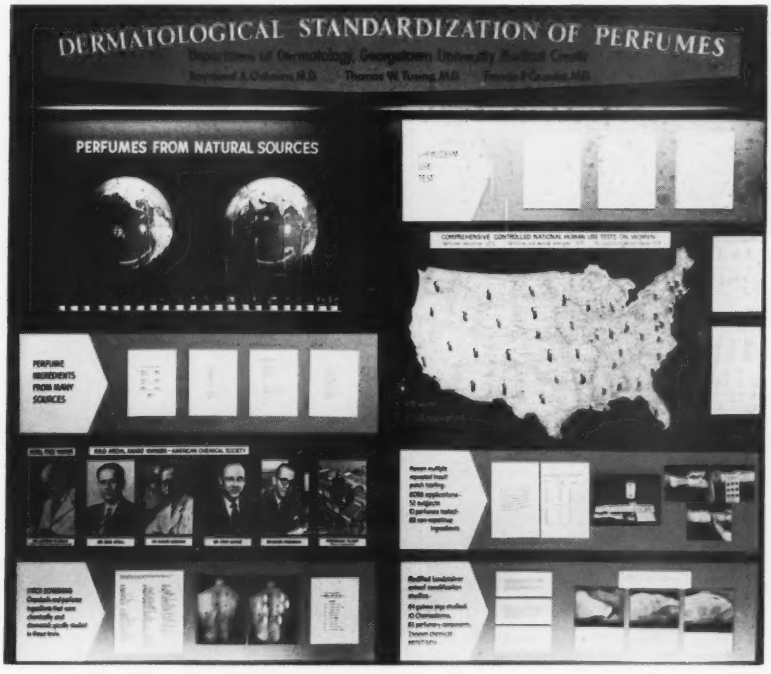
B-M Administrative V.P.

William M. Bristol III, has been named administrative vice-president of Bristol-Myers Products Division according to an announcement by Robert B. Brown, president of the division.

Pharmacy College Trustee

Dr. Paul L. Wermer, vice-president and medical director of Warner-Chilcott Laboratories, has been elected to the board of trustees of the Columbia University College of Pharmacy.

Perfume chemodern study for Firmenich was one of the exhibits at the American Medical Association Convention. Basic natural substances in perfumes and their geographic sources were shown as were the results of seven and a half years of study of perfumery components to make ten reproducible standardized basic perfumes of low sensitizing index.



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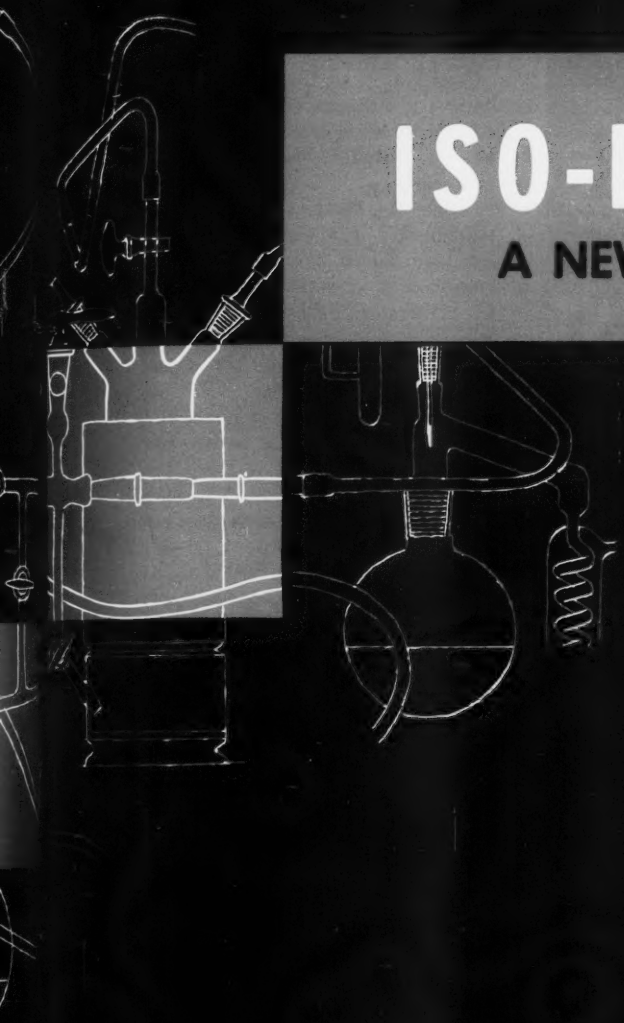

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A NEW AROMATIC CHEMICAL

The ester of a new terpene alcohol with
the empirical formula $C_{12}H_{18}O_2$
and reproducing the characteristic
mild, basic fragrance
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Members of the Drug and Pharmaceutical Committee of the Packaging Institute who attended the committee's June meeting at the Armstrong Cork Company Research and Development Center in Lancaster, Pa. Front row, left to right, J. L. Eagan, Rexall; M. E. Duellman, Massengill; E. A. Shultz, Smith, Kline & French; C. Spannello, Schering; Dr. David M. Ashkenaz, Wyeth. Second row: R. J. Hennessy, Lederle; C. V. Peterson, Ciba; G. E. Robinson, Merck; C. B. Burnside, Eli Lilly; J. Walls, Rexall; A. R. Jasuta, Bristol-Myers; J. A. Nelson, Schieffelin; G. M. Scattergood, Armstrong Cork Company, program coordinator. Rear row: A. Moreau, Wyeth; J. P. Guiane, Squibb; O. P. Norris, Winthrop; H. A. Richards, Abbott; J. M. Kolbas, Bristol; M. E. Lavrich, Procter & Gamble; H. W. Wolker, Mead Johnson; W. C. Stoll, Merck; and G. J. Schleck, Merck.

Elect Helen Booth Director Of Trade Executive Group

Miss Helen L. Booth, executive secretary of the Drug, Chemical and Allied Trades Section of the New York Board of Trade, Inc., has been elected to a three-year term as a director of the Trade Association Executives of New York City.

Miss Booth has been actively engaged in the trade executives group since 1947. Presently serving as chairman of the reception and attendance committee, she has held membership on the organization's membership and nominations committees.

Associated with the DCAT division of the Board of Trade for 29 years, Miss Booth was named its first woman secretary in 1943.

Mallinckrodt Appointments

Three new appointments in the technical division of Mallinckrodt Chemical Works have been announced. Dr. William B. Burford III has been named director of inorganic research; Dr. Charles O. Gerfen has been promoted to assistant director of inorganic research; and John A. Caughlan has been appointed assistant director, product development department, industrial chemicals.

D. & O. L. A. Branch Mgr.

John T. Brickner has been appointed branch manager of the Dodge & Olcott, Inc., Los Angeles branch office at 908 South Olive Street.

FRANK F. PEDI

Appointed by Bard

Frank F. Pedi has been named purchasing agent for Bard Pharmaceuticals, Inc., according to Dr. Robert H. Broh-Kahn, president.

Upjohn Assignments

Executive personnel assignments in the marketing division of The Upjohn Company have been announced by W. F. Allen, vice-president for marketing, who said the new assignments were necessitated by sharply stepped up activity in the company's marketing division.

Joseph J. Canon, formerly assistant director of domestic branch sales, has been appointed marketing staff administrator. Jack C. Gauntlett, formerly director of advertising, will continue as director of advertising and in addition serve as assistant marketing staff administrator.

William G. Freeman, formerly assistant director of domestic branch sales, has been named director of domestic branch sales for the Company's 18 U. S. branch offices. William C. Sugg, assistant director of domestic branch sales, will continue in that post, but will have supervisory responsibilities for a larger number of branches.

Richard P. Sellman, who has been regional sales manager on the West Coast, has been appointed an assistant director of domestic branch sales and will continue, for the present, to make his headquarters in San Francisco. Alfred C. Scott, formerly general sales staff manager, has been designated manager of a newly-created Hospital Sales Unit.

New Upjohn L.I. Branch

A new branch office and warehouse has been opened in Carle Place, Long Island, by the Upjohn Company. L. V. Smith, formerly sales manager of the company's home branch in Kalamazoo, has been appointed sales manager of the new branch.

The Wm. S. Merrell Company is constructing a new organic chemistry research laboratory, which will have ten laboratory units for medicinal chemistry research under the direction of Dr. Charles H. Tilford and radioisotope laboratories supervised by Dr. Thomas R. Blohm.

ADVERTISEMENT—*This entire page is a paid advertisement* *Prepared by U. S. Industrial Chemicals Co.*

U.S.I. CHEMICAL NEWS

July ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1957

Shredded Polyethylene Protects Electronic Brains

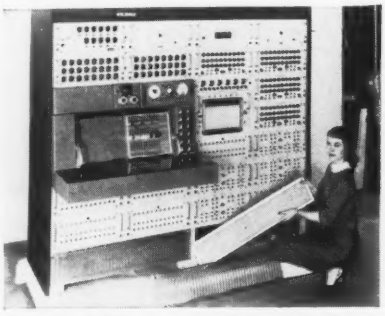
Special Form Supplied by U.S.I.

A self-charging electrostatic air cleaner, made of shredded polyethylene encased in a metal holder, protects the Goodyear Electronic Differential Analyzer (GEDA) from air-borne particles.

Shredded to present a large surface area to the air stream and to cause pronounced turbulence, the polyethylene generates an electrostatic charge which captures and holds dust, smoke and even pollen. Thus the air needed for ventilation in the electronic brain is free from the extraneous particles which might otherwise harm sensitive circuits.

These filters withstand air temperatures up to 212°F and are inert to chemicals normally encountered in industrial atmospheres. A special U.S.I. PETROTHENE® polyethylene resin is used, and is supplied in a form ready to be shredded instead of in the usual pellet form.

This particular polyethylene application is an example of how U.S.I.'s policy of tailor-making resins works in practice.



Secretary holds one of self-charging electrostatic air cleaners which protects analyzer.

Radiation Causes Decrease In Ability of Body to Absorb Methionine

New research indicates that the ability of experimental animals to make use of the essential sulfur amino acid, methionine, is impaired when the methionine is administered after exposure to radiation.

In the experiments, radiation from an X-ray source impaired the motor function of the digestive tract, causing delay in emptying the stomach and an increased rate of progression through the digestive tract. The progress of the methionine in the digestive tract of both the experimental and control animals was determined by tracer technique using methionine containing radioactive sulfur (S^{35}). Delayed absorption of methionine into the damaged tissues is thought to aggravate the digestive malfunctioning.

Previous research has shown that methionine given before exposure is effective in protecting against tissue damage caused by radiation. (U.S.I. CHEMICAL NEWS, Sept.-Oct., 1955.) These new findings indicate that methionine's action is largely protective rather than curative.

New Products, Packages Made 1956 Aerosol Industry's Biggest Year

Aerosol Hair Lacquers Become Sales Leader, CSMA Figures Show; New Glass and Plastic Aerosols Aided Industry's Growth

Results of the annual survey of the aerosol industry by the Chemical Specialties Manufacturers' Assn. show that 1956 was the biggest year yet for the 10-year-old industry. Unit sales were 320 million units, an increase of 33% over 1955, and 73% more than the 185 million units turned out in 1954.

Contributing to the upswing was the sharp sales rise of aerosol hair sprays. A relative newcomer to the field, hair sprays have even outdistanced insecticides in the race for top sales spot.

In the category of "Hair Lacquers", CSMA reported 1956 sales of nearly 80 million units. This figure is 25% of total sales for the industry.

Indications of the forward strides made by aerosols in the hair spray field had been apparent for some time; the Alcohol and Tobacco Tax Division of the Internal Revenue Dept. reported that last year 2,541,000 wine-gallons of alcohol went into hair and scalp preparations. This compares with 1,682,000 gallons for 1955, an increase of 51%.

While much of this alcohol went into hair and scalp preparations other than aerosol-packaged sprays and lacquers, it had been evident to industry observers that the aerosol market accounted for the bigger share of the gain.

New Packages Big Sales Factor

Influencing the upsurge in aerosol sales are such comparatively recent packaging innovations as the glass aerosol. Shampoos, perfumes, colognes, deodorants, suntan oil and other toilet preparations are now available in packages that combine the eye appeal of transparency with the convenience of the pushbutton dispenser.

In many cases, the desired safety factor is achieved by encasing the glass container in an attractive outer container molded of polyethylene. This plastic is also used almost exclusively for aerosol valves.

Thus, two U.S.I. products, ethyl alcohol and polyethylene, have played an important role in the phenomenal growth of the aerosol in-

MORE

A variety of container designs has helped build the aerosol industry to its present strength.

U.S.I. Offers New Brochure On Zirconium and Hafnium

A new technical brochure which describes application and fabricating techniques for zirconium and hafnium has just been published by U.S.I.

In 12 pages, "Zirconium and Hafnium" provides technically minded readers with up-to-date information on properties, fabrication and uses in the nuclear and chemical processing industries. The brochure may be obtained by writing to U.S.I. at 99 Park Avenue, N. Y.

New Dibasic Acid Yields Water-White, Monomeric, Low-Temp Plasticizer

Hazen color tests on three monomeric, low-temperature vinyl plasticizers made with three different aliphatic dibasic acids and the same alcohol reveal that "U.S.I. ISOSEBACIC"® acid imparts by far the least color. A plasticizer made from synthetically produced ISOSEBACIC acid gave the low color reading of 150. Plasticizers made from the other dibasic acids, both derived from vegetable or animal oils, showed higher color. One gave a reading of 175 and the other was so dark as to be beyond the Hazen color scale.

"U.S.I. ISOSEBACIC" acid, a unique synthetic acid mixture of three C_{10} dibasic acids (2-ethyl suberic acid, 2,5-diethyl adipic acid and sebacic acid), not only permits production of esters of very light color, but also imparts to end products excellent low temperature flexibility and non-volatility characteristics expected of a material of this chain length. Isosebacate esters can be made at much lower cost than the corresponding normal sebacate esters.

"U.S.I. ISOSEBACIC" acid also shows promise as an intermediate for polyurethanes, nylon, polyesters, and high-temperature jet lubricants.

Sodium Dispersions Can Now Be Made Continuously

A new process for the continuous production of sodium dispersions has been developed and tested by the U.S.I. Research Department. For many processes, continuous preparation can provide higher production rates than conventional batch preparation.

MORE

July ★ **U.S.I. CHEMICAL NEWS** ★ 1957

CONTINUED Sodium Dispersions

The design—including suggested equipment and procedures — is available to processors who are experimenting with the use of sodium dispersions on a production basis.

Details are given in a new U.S.I. brochure, "Sodium Dispersions." Pertinent up-to-date information is included on all aspects of sodium dispersion technology. A copy is available on request. Detailed design information for a particular continuous sodium dispersion set-up can be developed by working with U.S.I.'s technical service engineers.

CONTINUED Aerosols

dustry. Anhydrous ethyl alcohol is virtually a universal ingredient in hair aerosol formulations, and is widely used in other cosmetics now sold in aerosol form. Polyethylene, as already noted, is an important packaging component. U.S.I. provides nationwide distribution of these products, and technical assistance on their use.

Further Advances Seen

Aerosol industry leaders predict a continued rise in the sales curve. One of the largest makers of propellants forecast recently that unit sales of aerosols may well reach 600 million units by 1960.

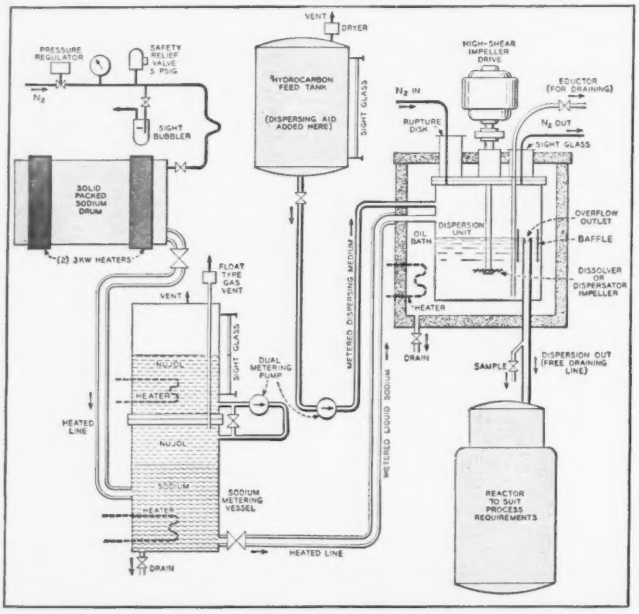


Diagram of the layout recently developed by the U.S.I. Research Department for continuous preparation of sodium dispersions . . . a new method in which sodium and an inert hydrocarbon dispersing medium are continuously pumped into a preparation tank, agitated to the desired particle size, and the finished dispersion discharged at an equal rate.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

A solvent synergist has been developed to upgrade general purpose cleaners. Said to be compatible with numerous solvents, to emulsify insolubles in water, and to be useable alone with water. Low in corrosive properties, volatiles, odor and cost. **No. 1250**

Flat non-curl photoprints now can be produced with a new chemical stabilizer, its manufacturer claims. Prints are said to show improved retouching properties, pliability and high gloss. **No. 1251**

Sodium amide dispersed in xylene now is available in 1, 2 and 5 lb. cans. Commercial production is reported planned, with concentrctions of 50% solids or lower. Carriers such as xylene, benzene and toluene will be utilized. **No. 1252**

Polyethylene dropper bottles with close control of flow rate and drop size now are offered. Squeeze operated, they are said to be contamination proof and to eliminate need for bulb fitments. **No. 1253**

The chemistry of hydrocarbon petrochemicals and derivatives is the subject of a new book which can be purchased. Preparation, reaction, catalysts, equipment, new theory and developments are covered. **No. 1254**

A mold release for polyethylene, reported to be a relatively inactive parting agent, has been designed to cut down the stress crazing experienced in using some silicone releases. **No. 1255**

New precision splitters for sampling accuracy have been developed. For assay and microscopic work, they feature multiple chutes down to 1/8" wide, machined parts, elimination of traps. **No. 1256**

Beta Caryophyllene heads several sesquiterpene fractions now offered in commercial quantities by a major producer. Purity of fractions is said to range between 90% and crude. **No. 1257**

Automatic freeze-drying laboratory equipment, new type tray dryers, faster manifold-type freeze-dryers, and combination units are detailed in a brochure just published. **No. 1258**

Corrosion control in industrial and marine applications is the aim of a new system of primer and finish surface coatings based on polyamide reacted epoxy resins. Advantages claimed: adherence over wet surfaces, no under-film creep, toughness. **No. 1259**

PRODUCTS OF U.S.I.

ALCOHOLS

Ethyl Alcohol (Ethanol): Specially denatured — all regular and anhydrous formulas. Completely denatured — All regular formulas for industrial use, anti-freeze. Pure alcohol—USP 190°—Absolute, N.F., taxfree, taxpaid.
Butanol (Normal Butyl Alcohol): Latent solvent for nitrocellulose, solvent for ethyl cellulose, many resins, many syntheses.
Amyl Alcohol, Refined: Fine chemicals, pharmaceuticals.
Fusel Oil, Refined: Blend of amyl alcohols refined by chemical treatment, distillation.
Proprietary Denatured Alcohol Solvents: SOLOX® — General-purpose. FILMEX® — Special, authorized for certain industries. ANSOL® M — Anhydrous, special blend for lacquers, resins, etc. ANSOL® PR—Anhydrous, special blend with higher ester content and solvency for lacquers, resins, etc.

OTHER PRODUCTS

PETROTHENE® Polyethylene Resins
Inorganic Chemicals: Sodium, Chlorine, Caustic Soda, Sodium Peroxide, Sodium Sulfate, Sulfuric Acid, Phosphatic Fertilizer Solution (Wet Process Phosphoric Acid) Ammonia, Nitrogen Fertilizer Solutions, Ammonium Nitrate. Zirconium Oxide, Zirconium Tetrachloride, Hafnium Oxide, Hafnium Tetrachloride.
Esters, Ethers and Ketones: Normal Butyl Acetate, Dibutyl Phthalate, Diethyl Carbonate, Diethyl Oxalate, Ethyl Acetate, Ethyl Ether, Acetone, Diatol®.
Intermediates and Fine Chemicals: Acetoacetarylides, Dimethyl Hydrazine, Ethyl Acetoacetate, Ethyl Benzoylacetate, Ethyl Chloroformate, Ethylene, Ethyl Chloride, Ethyl Sodium Oxalacetate, U.S.I. ISOSEBACIC® Acid, Methyl Hydrazine, Sodium Ethylate Solution, Triethyl Aluminum, Trimethyl Aluminum, Urethan USP (Ethyl Carbamate).
Animal Feed Products: Calcium Pantothenate, Choline Chloride Products, Curbay B-G® 80, Special Liquid Curbay®, DL-Methionine, Niacin USP, Riboflavin Concentrates, Vitamin B_{12} and Antibiotic Feed Supplements, Vacatone® 40, Vitamin D_3, E and K_3 Products, Antitoxidant (BHT) Products, U.S.I. Permadry Products (Sealed-in Vitamin A), Special Mixes.
Pharmaceutical Products: DL-Methionine, N-Acetyl-DL-Methionine, Riboflavin USP, Urethan USP, Intermediates.
Metals: Titanium, Zirconium and Hafnium Sponge and Platelets, and Oxide.

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SKF Appointments

Samuel M. Felton, Jr. has been appointed assistant manager of the distribution department of Smith, Kline & French Laboratories, according to Carl K. Raiser, director of distribution.

Thomas Kennedy, formerly administrative assistant in SKF's professional service department, replaces Mr. Felton as trade relations section head with responsibility for distribution of SKF products. Robert J. Bolger will continue to be in charge of retail relations.

Mr. Raiser also announced that John Hartwell, formerly of the trade relations section of the distribution department, has been promoted to an assistant product manager in SKF's medical promotion administration department.

Heyden Pensacola Plant

Heyden Newport Chemical Corporation is constructing a new plant at Pensacola, Florida to produce terpene alcohol esters, Simon Askin, president, has announced. The new plant, which is scheduled for completion in the fourth quarter of 1957, is part of Heyden Newport's expansion program for upgrading turpentine-based products, Mr. Askin said.

The company plans large volume production of terpinyl acetate and isobornyl acetate, and also will produce menthyl acetate and neomenthyl acetate in commercial quantities for the first time at the new Pensacola plant.

Appointed by Schering

Victor M. Longstreet has been appointed manager of Schering Corporation's management research department, Francis C. Brown, president of the company, has announced. Mr. Longstreet is replacing Mitchell Chadrjian who has been elected vice-president of Schering Corporation, Ltd., Canada.

N. Niles Barry has been named to the newly created position of assistant manager of the department. He joined Schering's field sales force in 1953 and was transferred to the management research department in 1954.

Asst. to Emulsol Sales Mgr.

Sy Friedman has been appointed assistant to A. O. Raven, sales manager of Emulsol Chemical Corporation.

Rejuvia Relocates Offices

Rejuvia Beauty Laboratories, Inc. has announced removal of its offices to 30 Irving Place, New York 3. Telephone: ORegon 4-1142.

Whitlock Heads Ortho

Foster B. Whitlock has been elected president of Ortho Pharmaceutical Corp., replacing Harry C. McKenzie, who has been named to the executive committee of Johnson & Johnson's board of directors.

R. A. Armstrong is V. P.

Robert A. Armstrong, sales manager of Goldschmidt Chemical Corporation, has been promoted to vice-president. He has been with the company for twelve years. Mr. Armstrong is a past president of the Cosmetic Industry Buyers and Suppliers Association.

ROBERT A. ARMSTRONG

RALPH W. HENDERSON

Fenimore L. Bodman

Fenimore L. Bodman, retired senior partner in F. L. Bodman Company, Philadelphia, died June 2 in Bryn Mawr, Pa. He was eighty-one years old.

Elliott A. Bowles

Elliott A. Bowles, president of Whitehall Pharmacal Company, died June 27 at the age of 43. After having served as special assistant to the U. S. Alien Property Custodian in the pharmaceutical and special services divisions, Mr. Bowles entered the drug field in 1944. He joined Whitehall in 1950 and became president last February.

Millard Carnrick

Millard Carnrick, president and board chairman of the G. W. Carnrick Company, died June 27 of a heart attack at his home, 188 Union Street, Montclair, N. J. He was 78 years old.

Mr. Carnrick attended Columbia University and in 1898 was co-founder of the pharmaceutical firm with his father, the late George Wheeler Carnrick.

Surviving are his widow, Aurelia, three sons, Dr. Millard Carnrick Jr., Richard and Robert; a daughter, Mrs. Gloria C. Ewing; a brother, George; a sister, Mrs. Florence C. Lundbeck, and eight grandchildren.

Daniel Joseph Gallagher

Daniel Joseph Gallagher, manager of the Chicago medical sales division, Eaton Laboratories, died in Norwich June 13 at the age of 45. Mr. Gallagher had been with Eaton for almost seven years. He was appointed district manager in 1952, and manager of the Chicago division in 1956. He lived in Arlington Heights, Ill. Born at Moncton, New Brunswick, Canada, he attended McGill University at Montreal, where he majored in advertising. His wife and two sons survive.

Ralph W. Henderson

Ralph W. Henderson, president of Sterling Drug Mfg., Ltd., Canadian subsidiary of Sterling Drug Inc., died June 20 at Windsor, Ontario, after an automobile accident. He was 50 years of age.

Mr. Henderson, a native of Canada, had been associated with the Sterling organization, both in Canada and in the United States, for 24 years. Since 1952 he had been in charge of all Sterling Canadian units except Winthrop Laboratories of Canada, Limited.

From 1947 to 1952 Mr. Henderson was divisional vice-president of Winthrop Laboratories in charge of manufacturing at Myerstown, Pa.

He was a graduate of Ontario College of Pharmacy with a degree of Ph. C, and the University of Toronto with a degree of Phm. B.

He is survived by his widow, Mrs. Marjorie Henderson.

Jules O. Vollbehr

Jules O. Vollbehr, president of Jules O. Vollbehr, Inc., died suddenly June 24 at his residence in Brookville, N. Y. He is survived by his wife, Mrs. Rosemarie Vollbehr, and a son, Robert.

CAPACITY

15 MILLION UNIT-PACKAGES A DAY

Ivers-Lee has the ability to turn out 15 million flexible Unit-Packages in a normal 8 hour production day. This amounts to over three and a half billion Unit-Packages a year.

When this capacity is coupled with the ability to Unit-Package such diversified products as creams, powders, liquids, tablets and capsules, you have the reason why Ivers-Lee is the foremost contract Unit-Packager in the world.

This is also the reason why your order, whether for 5 thousand or 500 million packages, receives the very best of attention and service . . . besides being packaged in the finest of all possible Unit-Packages.

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Ivers-Lee is the creator and Contract Packager of Super-Sealtite, the Catchcover, the Tab Pak and a thousand and one other unusual packages for sampling and distributing single or multiple doses of tablets, capsules, powders, creams and liquid Dropettes.

Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

The Job of Top Management is to:—

Provide inspiring leadership.
Maintain increasing demand for its products.
Forecast future operations imaginatively.
Budget finances intelligently and briefly.
Understand actual costs.
Delegate maximum responsibility and corresponding authority.
Develop young executives.
Shorten conferences and restrict committees.
Define company policies clearly.
Maintain the good will of customers and dealers.
Maintain the good will of employees.
Maintain the good will of neighbors.
Maintain the good will of the general public.
Maintain the good will of the stockholders.
Maintain the good will of bankers.

Maintain your health, restrain your tongue, contain your temper and sustain your directives.

P.S. I'd like to meet any company president who can honestly rate himself A on all these requirements.

Pole Buildings

Construction costs are continuing to climb, consequently many firms are utilizing wood pole buildings because they are cheaper than any other form of construction and can be erected much more rapidly. The procedure in erecting a pole building is as follows: scrape the top soil off with a bull dozer and level the site. Run lines for the exterior and interior poles. Dig post holes with a post hole digger at required intervals. The holes should be about three feet deep to get below the frost line in many areas. Telephone poles can be used and these can be bought already impregnated with creosote. Many firms prefer to use poles treated with pentachlorophenol (made by Dow Chemical Co.) because it resists fungi, rot and termites. Most firms prefer to use this because it has no odor, is non-corrosive and can readily be applied at the site. The poles are squared up as they are set and splash boards, treated with pentachlorophenol, are nailed to the exterior poles next to the ground. Plates or girths are spiked to the poles for rafter and roof support. 2x4 purlins are nailed to the rafters and the roofing, usually aluminum sheet or corrugated asbestos, is nailed to the 2x4s. The exterior cladding can be asbestos or aluminum sheeting. Usually a pitched roof is used because it permits wider spacing of interior columns. Concrete flooring is poured after the building is erected in the conventional manner.

Such a building requires no foundations and no footings. There is no limit to size of one storey buildings. Pole warehouses of forty or fifty thousand feet have been built. One cannery company out west built a sizable warehouse in a week. The durability of pole buildings is indicated by the fact that some old farm barns that were built this way are still in existence after a century. During Hurricane Hazel a year or so ago a pole building took the storm with no damage except punctures caused by flying debris. Sheet materials are so various that the problem of erecting a good looking building that will harmonize with others on the same site requires only a little imagination.

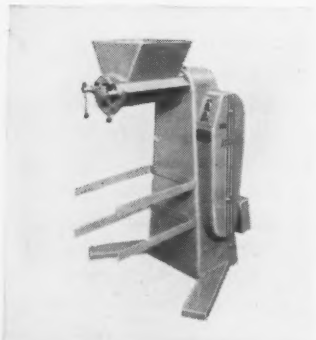
Lilly And The Metric System

Eli Lilly & Co. has gone completely over to the metric system, a move long overdue in the industry. For years the industry has used a confusing potpurri of apothecaries. avoirdupois and metric measurements and it is high time somebody did something about it. I am glad it was Lilly who took the first step because they are big enough to make suppliers line up and toe the mark. In this endeavor Lilly should have the support of every firm in the drug and cosmetic industry. It's a hell of a big job when you consider the records and equipment of both suppliers and users that will have to be converted. But with Lilly giving a healthy push the job will in time be done.

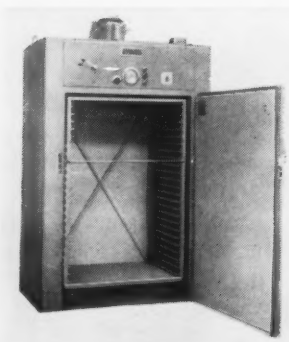
(Continued on page 88)

Strong Cobb operator John Klipfell checks the capsule-shaped tablets being produced on the Stokes Model 533. The centralized control panel at the front of the machine facilitates rapid set-up and adjustments.

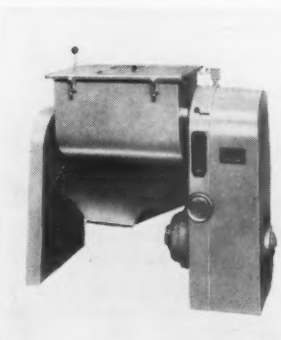
Stokes Auxiliary Equipment for Pharmaceutical Manufacturers



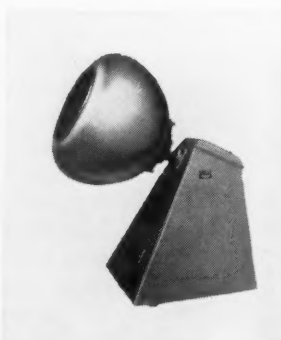
Granulators employ the efficient oscillating principle for breaking up moistened or dried aggregates. In a range of capacities.



Drying Cabinets use recirculating air; steam or electric heating under automatic control. Models with 5, 16 and 24 trays.



Granulating Mixers, for blending wet or dry materials, feature dust-tight lid, safety shut-off, controlled tilt for unloading.



Coating Pans. Model 1-D stand uses 16″ to 60″ stainless or copper pans, or polishing pans with removable canvas drums.

A close-up view of the capsule-shaped tablets tumbling from the die table. Tablets produced on both pressure stations of the "double-sided" Model 533 are more uniform because a single hydraulic adjustment controls release pressure of both rolls.

Strong Cobb compresses capsules 2 to 3 times faster on new Stokes 533 tabletting machine

Strong Cobb Company, Inc. of Cleveland, Ohio are producing capsule-shaped tablets on a Stokes Model 533 Rotary Tabletting Machine. Production rates have increased 2 to 3 times over that of former equipment.

Many of the quality pharmaceuticals being produced by this well known Cleveland private formula manufacturer involve the handling of the more difficult materials such as liver extracts, yeast, and mineral-vitamin combinations. Strong Cobb has had "very satisfactory results" in the tabletting of these formulations on their new Stokes Model 533.

Key production personnel like their new rotary tabletting press—say that it is "quiet, smooth and also quite efficient."

This quiet, smooth and efficient operation is the result of careful design engineering. Heavy duty ball, needle and roller bearings are used at vital points. Large diameter punch circle, wide-face pressure rolls, and gradual slope cams all add up to smooth, precise, high-speed operation and long tool life.

The Stokes Model 533 occupies little floor space. Operating costs are lower because the press requires so very little attention. Pressurized lubrication is continuous and completely automatic. Centralized controls and easy access enable fast and accurate set-up, adjustment and changeover.

Find out how the new Stokes Rotary Tabletting machines can save on your own production. Write for Bulletin 650 or call your nearest Stokes office.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

Child Psychology

Bookshelves are loaded with tomes about child psychology, which assumes that children come into the world with unalterable tailor-made psychological patterns. The foremost advocates of this dogma—the progressive educationists—say you must allow children untrammeled freedom of expression. Discipline of any sort is anathema to these usually childless crack-pots. They are abetted by the psychiatrists, who, when they psychoanalyze a criminal that has just murdered his wife, explain beyond any question of doubt, the crime was committed because of the fact that the murderer's mother wouldn't let him suck his thumb after he was three months old.

I have decided to change all this. As a result of three week-ends of research while riding herd on my three wild grandsons, aged two, three and four, I have formulated a new science—or rather I have brought an old one up to date. I have changed child psychology to 'child sockology.' Also I have invented a new educational instrument with which to apply this modernized science. In my day the instrument was the back of a hair brush, a razor strop, a horsewhip, a ruler, a blackboard pointer or whatever else happened to be handy for the educator, be he parent or teacher.

My instrument consists of a short length of rubber hose—plastic will do—attached to a piece of broom handle about two feet long. In cases of mild recalcitrance you apply the flexible end of the instrument vigorously to the bottom of the child; and the broom handle over the noggin in cases of extreme obduracy. This educational method is based upon a very simple premise: if the way to a man's heart is through his stomach, the way to his brain, especially when he is very young, is through his bottom. I should know. I can tell you all about the Orinoco River, even after fifty years, as a result of a rather crude educational implement rudely applied by my teacher. How else could I have remembered the Orinoco River?

Vorti Siv

This is the name of a portable sifter-sieve-screen made by J. M. Lehman Company, Inc., Lyndhurst, N. J. The machine has adjustable amplitude and variable speed drive. It is said to be a honey for difficult materials.

Fatty Acid Pump

Hot fatty acids are hell to pump because the slightest lowering of temperature anywhere along the line will cause the acid to crystallize and set up. Moreover it is very difficult to keep ordinary pumps from leaking when handling fatty acids. A special pump has been developed for handling fatty acids by the LaBour Company, Elkhart, Indiana. These pumps are made of a special alloy and will handle fatty acids up to 520°F with no trouble.

Give 'em a Shot of Oxygen

Somewhere I read that oxygen slot machines are on the market. These machines are equipped with breathing tubes fitted with disposable sanitary masks. You drop a coin in the slot, inhale deeply and Presto! your hangover is gone. In all seriousness oxygen dispensing units should be available in every factory and employees should be required to inhale pure oxygen during the coffee breaks. It would be a lot better for them than the lousy coffee served in the average factory cafeteria. If employees objected, pure oxygen could be injected into the air conditioning systems with which most offices and cafeterias, if not the packaging departments, are equipped. During the war airmen used oxygen copiously to get over the jitters before and after combat missions. Try a shot yourself sometime. It's almost as good as whiskey.

The Weather

Everyone knows that hot humid weather exerts a depressing physiological effect on him. Scientists are investigating the effect of negatively and positively charged ions upon human health and personality. The effects of ionization have been studied in connection with blood pressure, asthma, hay fever and various virus infections. Positive ions have bad effects, negative ions good effects. Dr. T. T. Puck of the University of Colorado Medical Center, one of the innumerable scientists studying the effects of ionization on health and personality, contends that virus infections are an electrical phenomenon; that viruses and human cells normally carry a charge of negative ions, hence the invasion of one by the other is impossible until something occurs to change the charge in the cells from negative to positive, at which point the virus is attracted and disease begins. Philco is developing a room air conditioner which will charge conditioned air with negative ions. General Electric also is doing a lot of research in the same field. Work is being done on ionization at the University of California, Yale, the National Institute of Health and many other research centers.

Since the body is an electrical as well as a chemical complex the day may come when all diseases will be treated by some electro-chemical means. Better start adding electro-chemists to your research staffs.

Projection Charts

Monsanto is the first firm in the industry that I've heard of which has started making projection charts of future operations along the lines I have advocated for many years. They use both a mathematical expectation approach and a conceptual mathematical approach applied to their probability budget. Their projection chart—that's really what it is—is used for long term programming of capital requirements for materials, facilities and financing.

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Some Interesting Statistics

The figures on profits and return on investment given in the table below were culled from a report published by Fortune on the 500 largest firms in America. From the same report I computed the last two columns on sales dollars per employee and investment per employee. I used to think that a lot more money was required to operate in the chemical industry than in the pharmaceutical industry. But the investment per employee in the pharmaceutical industry has increased enormously since the introduction of chemo-therapeutics and antibiotics. Warner Lambert's and Sterling Drug's investment of about $6,000 per employee was about the range twenty years ago when I made a similar tabulation.

	Profit as % of Sales	*% Return on Investment*	*Dollars of Sale per Employee*	*Dollars of investment per Employee*
Long Line Houses				
Lilly	16.6	19.7	$21,000	$18,000
Pfizer	10.2	15.9	18,750	12,000
Merck	11.7	14.7	17,000	13,600
P. D.	13.2	17.2	13,500	10,400
Abbott	11.2	14.2	13,500	18,000
Specialty Houses				
Sterling	9.5	20.	14,000	6,630
Warner Lambert	8.7	21.	14,500	6,000
SKF	18.1	42.5*	48,000	21,900
Vick	8.4	13.8	20,000	12,500
Chemical Firms				
Dow	10.6	15.9	22,500	19,000
Monsanto	7.1	10.6	29,000	19,000
Dupont	20.3	17.6	21,000	24,500

*This figure is not an error. SKF made in 1956 almost nineteen million on an investment of forty-four and a half million.

Vibratory Conveyors

Carrier Conveyor Corporation, 249 N. Jackson St., Louisville, Ky. have a variety of vibratory conveyors, particularly a circular vibratory conveyor to elevate material ten or twelve feet. This would make a good core for a continous dryer. In a space 4 by 4 feet a ten foot unit contains eighty linear feet of conveyor. Vibratory conveyor dryers are efficient because they can be jacketed and, because the material constantly is in motion, all particle surfaces are constantly exposed to drying air.

Techniplan

This is the name given by Globe Wernicke, Cincinnati 12, Ohio, to their portable semi private office units. These steel units come in a variety of sizes and colors and can be set up anywhere without interference with existing light and ventilation systems.

The Art of Stimulation

The priceless ingredient of leadership is the ability to stimulate people to think. It is an ability that great teachers have. Those who possess it are interested in people as people and not as elements in an organization or group. They are sympathetic with the the efforts people have put into their jobs. They are friendly and they realize that a smile helps to salve irritation and disappointment. They are constructively suggestive and are never caustically critical. They feed ideas, which, if they are not solutions to problems will open hidden avenues of approach to solutions, which the worker had not thought of. Many times I have been told that somebody came up with the solution to a problem "just after" I had left the scene of operations. These men didn't pinch my ideas and publish them after I had left so as to get full credit for them. The solutions were their own. But something that had been said in our discussions had started a train of thought going which eventually proved fruitful. In my work I make a point of never claiming credit for anything. I just take the cash.

Direct Mail Costs

Because of excessively low rates for third and fourth class mail taxpayers are subsidizing businesses that use this form of advertising. I get pounds of stuff every day which immediately is dumped into a wastebasket without being opened. And it's a damned nuisance. Apparently many companies never check their mailing lists. For almost thirty years I have been getting a circular letter "Silicate P's and Q's" from the Philadelphia Quartz Company. I don't use silicate of soda and I have no client who does. Consider what the company has spent during the past thirty years to send me that useless bit of mail. International Nickel sends me frequently an illustrated brochure for God knows what reason and they've also been sending it for at least twenty years. When I moved my office to East Chatham I instructed the post office to forward first class mail only but apparently the people who are determined to send me stuff I don't need and won't read got the changed address from the post office and I am still pestered with their offerings. No wonder the Post Office always operates with a huge deficit.

Peracetic Acid

For a long time now the Lobund Institute of Notre Dame University have used peracetic acid to insure perfect sterility of their biological processing laboratories. As the material is corrosive special requirements must be met to handle the material safely. You can get a bulletin on the subject from the makers of peracetic acid, Becco Chemical Division, Food Machinery and Chemical Corp., Station B, Buffalo, N.Y.

Driverless Lift Trucks

Sometime ago in a prediction of things to come in 1980, I mentioned among other things, automobiles equipped with photoelectric controlled steering gear, which automatically would follow white lines painted on highways without attention from the drivers excepting when they wish to take control to pass other vehicles. A device like this has been developed by Barret-Cravens and applied to lift trucks. These trucks, loaded or unloaded, will follow a white line painted on the floor for any distance and around as many turns as necessary to get to destination. The same firm has other models of a magnetic type which will follow a wire buried in the floor. In the plant of the Beckett Paper Co., Hamilton, Ohio, Barret-Cravens has an installation in which trucks move from one warehouse to another making several turns on the way entirely without supervision. The trucks stop automatically at loading and unloading stations. If the guide track is cut off for any reason the truck stops automatically. If it encounters an obstacle in its path a spring loaded bumper automatically stops the truck. In this installation trucks operate in-doors and out-of-doors in all sorts of weather and they go up and down ramps as well.

The installation of two way radio on lift trucks was regarded as a long step forward in eliminating loadless return trips. Pretty soon we will have lift trucks that will respond to high frequency dog whistles.

The Class of '57

From all over the country come reports that the crop of college graduates being turned out this year want security. This year they seem to want security even more than high salaries. Apparently the old pioneering spirit that made America great has gone with the wind since the Federal government undertook to look after us all from the cradle to the grave. We still have the Alaska frontier to pioneer in; if only the present generation had the guts their grandfathers had. It is a pity these young graduates failed to learn that there is no security anywhere except in one's self. Security is an illusion believed in by fools and cowards.

The Scientists

There is a universal rappaport among scientists which places them above political creeds and therefore makes them contemptuous of politics and politicians. In itself this attitude is unscientific because politics may be more amenable to scientific investigation than any of us realize. Modern civilization is so complex that it cannot be operated without scientists and since civilization is rapidly becoming even more complex, the day may come when the scientists will have to run it. In spite of their aversion to politics I think the scientists would do a better job of running society than the ward heelers who are running it now.

Antifoam

If you have a waste problem or a sewage disposal problem caused by excessive foam in your plant effluents, try Antifoam s-118 made by Hodag Chemical Corp., 7247 N. Central Park, Chicago 45. Upjohn uses this material to get rid of the heavy, tough foam from spent antibiotic beers and it is said to work perfectly. Speaking of foam reminds me to tell you that Laub Engineering Co., 3059 West Valley Blvd., Alhambra, Cal., makes a filling machine called Siphon Sip for filling detergents into squeeze bottles. One company uses this filler to fill squeeze bottles without taking them out of the cases in which they are received. Caps are placed on by hand and tightened with a flexible shaft cap tightener.

Mene Mene Tekel Upharsin!

In her book the 'Echo of Greece,' Edith Hamilton has this to say about the decline of Greece: (The italics are mine.)

"In the great days that followed after Salamis the spirit of Solon's Athens persisted and grew even stronger. It was the Athenians' pride and joy to give to their city. * * * There had to be a complete change before Athenians could look at the city as an employer who paid her citizens for doing her work, and the change went deep. *Now instead of men giving to the state the state was to give to them. What the people wanted was a government which would provide a comfortable life for them, and with this as the foremost object ideas of freedom and self-reliance and service to the community were obscured to the point of disappearing. Athens was more and more looked on as a cooperative business possessed of great wealth in which all citizens had a right to share. The larger and larger funds demanded made heavier and heavier taxation necessary, but that troubled only the well-to-do, always a minority, and no one gave a thought to the possibility that the source might be taxed out of existence.*"

Dividend Clearing House

The increasing number of stockholders and the practice of paying quarterly dividends imposes a terrific clerical burden upon corporations, which in itself uses up a lot of the earnings that otherwise might be added to dividends. In cases of small dividends on low priced stocks, and, especially the payment of dividends to holders of odd lots, the cost of the bookkeeping, checks, envelopes, stamps and clerical work often is larger than the dividends themselves! A clearing house should be set up and banks should be authorized to pay dividends upon presentation of numbered coupons. Stock certificates should have coupons attached in the manner of bonds. Under this system corporations would make payments to the clearing house of the total amount of all dividends in single checks. At the same time they would an-

nounce the amount of the dividend due each share. This information could be published in a monthly bulletin and distributed to all banks everywhere so that they could determine the value of the coupons. It would help too to stop the damned silly practice of paying dividends on a quarterly basis. Some corporations not only pay dividends on a quarterly basis but also publish financial reports as well.

Teacher Shortage

The press is filled with stories about the alarming shortage of teachers. The shortage is getting worse as the population increases. The complaint is made that teaching as a profession is not attracting replacements because industry is outbidding the schools and colleges for promising young talent.

There is a simple solution to the problem: the teaching profession, being our most important profession, should be exempt from income taxes, both federal and state. This I believe would enable teaching to compete with industry. If you think this suggestion makes sense wire your congressman.

New Chain Conveyor Delivers Bottles, Jars or Cans to Liquid Fillers

A new conveyor unit for delivering bottles, jars or cans to single or multiple-liquid fillers is now available from Arthur Colton Co., 3400 E. Lafayette Ave., Detroit 7. The conveyor can be mounted on the front of pedestal or base-mounted fillers. It can also be pedestal mounted or attached to a roller stand for use with bench-type fillers.

The 3-in. wide conveyor is a plain-surface, single-chain type. Nylon, steel or stainless steel flights are provided as required. The standard conveyor chain is driven by sprockets on 6-ft. centers. The drive sprocket is powered by a 1/6-hp, right-angle gearmotor equipped with a starter switch. Conveyor speeds are adjustable up to 80 fpm by changing drive sprockets.

A three-air-cylinder escapement attachment, controlled by a solenoid-operated master valve is provided for the conveyor or when required. This is a simple, compact mechanism for multiple filling. Factory air line pressure of 25-psi will operate the escapement, which can be adjusted to admit any desired number of bottles for the filling operation. Timing of the escapement is provided by contact between any moving machine part that operates once during the filling cycle, and the button-type air valve leading from the escapement unit.

Colton Heavy-Duty Rotary Tablet Press Line Redesigned for More Compression Pressure

A line of high-speed, single-rotary, heavy-duty tablet presses that has been redesigned to provide a

New Way to Code Cans, Jars, Bottles

Compact, portable attachment . . . requires no breaking of line . . . delivers up to 600 imprints per minute.

The Gottscho "Model TB" MARKOCODER® machine is a unique, fully automatic, packaging line attachment for coding *bottoms* of cans, bottles, jars, canisters, paper containers at high speeds. Makes consistently clean, permanent ink imprints. Designed for quick code changes, simple maintenance, easy adjustment for different sizes. Offers all the advantages of a fixed-installation imprinter without requiring alteration of present set-up.

Write for Bulletin "TB"

ADOLPH GOTTSCHO, INC.

Dept. C Hillside 5, N. J. / *In Canada:* RICHARDSON AGENCIES, LTD., Toronto and Montreal

Gottscho

fifty per cent increase in compression pressure is now available from Arthur Colton Company, 3400 East Lafayette, Detroit 7, Michigan. Now providing pressures up to 36,000-lb. the new Colton Models 240 and 250 presses are ideally adapted for heavy-duty slugging operations as well as high speed production of large tablets hard tablets, and tablets requiring deep fill operations. These single-rotary presses are capable of producing large capsule-shaped and large round or irregular shaped tablets at speeds (600-700 tablets per minute) that will allow fast amortization.

To attain the significant increase in compression pressure, Colton engineers increased motor size to 3-hp on both models. The speed reducer in the die table drive has an increased load-carrying capacity. Splined shafts of high torque capacity are provided on the speed reducer. Flywheel size has been increased to assure smooth drive operation.

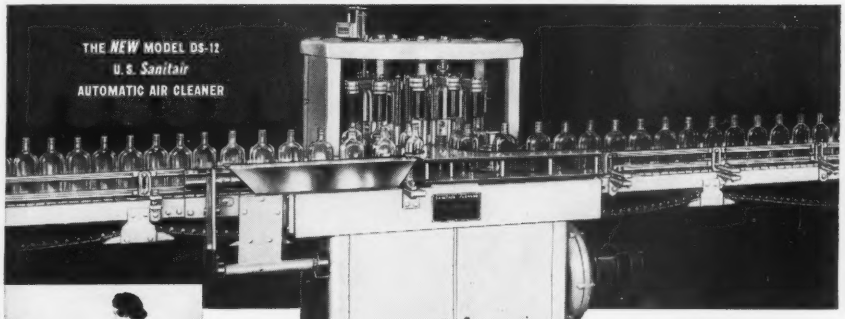
To resist the increased compression forces, the back plate supporting the upper compression roll has been reinforced. The diameter of the upper pressure roll has also been increased. A new upper ball thrust bearing has been included in the die head in the new Models to resist the increased tablet ejection forces. The improved model 240 press has sixteen punches and dies and a maximum compression pressure of 36,000-pounds. Maximum tablet diameter is 1-in. and maximum depth of fill is 13/16-inches. Production rate is up to 700 tablets per minute.

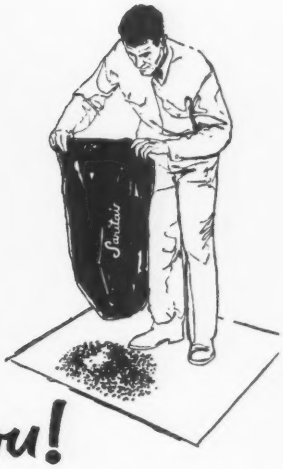
The improved Model 250 press has twelve punches and dies and a maximum compression pressure of 36,000-pounds. Maximum tablet diameter is 1¼-in. and maximum depth of fill is 1⅛-inches. Production rate is up to 600 tablets per minute. Both models occupy a floor space about 39 x 44 in. and are 68-1/8 -inches high. They weigh about 1,550 pounds.

Heat and Leak Test Tank for Aerosols

Island Equipment Corp., 27-01 Bridge Plaza North, Long Island City, is introducing its new Styl-O-Matic Heat and Leak Test Tank. This unit is designed for testing aerosols automatically and consists of a tank and a movable chain belt that carry the aerosol down into the tank and up out of it. The chain is a stainless steel Rex Table-Top chain and is available in widths for single or double rows of aerosols, depending on capacity required.

The cans are prevented from floating or slipping on the incline and decline by magnets attached to the chain track. The tank itself may be constructed in hot dipped galvanized or stainless steel, and the unit serves as both a heat and/or leak test tank. Write for Bulletin AT-1 which gives complete drawings and specifications.





the "Catch" will amaze you!

THE E-Z TWO-TUBE AIR CLEANER. Containers inverted over air valves, two at a time, up to 40 per minute. Blows carton lint, dust, etc. out of new containers; any size or type. Send for the E-Z Bulletin.

OF COURSE your containers are clean . . . they usually come to you in cartons. Yet, to be sure, run them through a U. S. Sanitair and be amazed at the "catch" of dust, carton lint, etc., from supposedly clean containers.

Throughout the packaging world, the U. S. Sanitair is widely adopted as the sure sanitary precaution. Many find it essential to product uniformity; to safeguard the material content of their products; or as a precaution against failure of aerosol valves.

Built in models of varying capacities with container size changeover. Handle all size container openings including AGST, wide-mouth and aerosol-valve finishes. Send for the "Sanitair Bulletin" now.

FOR RINSING any size or shape bottles or jars. The U. S. Rotary Rinser cleans both insides and outsides of containers. For water, steam or air. Send for the Rotary Rinser Bulletin.

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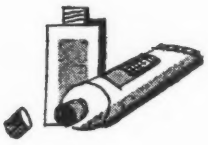

Advancing Therapy

New Vitamin Research

Grants-in-Aid in the amount of $95,393.00 have been awarded in the first half of 1957 to University investigators for research in nutritional biochemistry and matabolism.

Included among recipients of the grants and the subjects of their research are:

William B. Bean and Robert E. Hodges, State University of Iowa, University Hospitals, Iowa City, Iowa; for continuation of their investigations of pantothenic acid and its antagonists in human volunteers.

Studies with human volunteers subsisting on synthetic diets will be continued to obtain further evidence on the effects of low pantothenic acid intake alone and in conjunction with administration of the pantothenic analogue, omega-methyl pantothenic acid. These studies at Iowa represent the first controlled experimental study attempting to induce pantothenic acid deficiency in man in order to observe its possible manifestations and if abnormalities occur, then to relate them to clinical symptoms which may possibly be associated with a hitherto undetected "natural" deficiency of this vitamin.

Albert B. Eisenstein, Washington University, School of Medicine, St. Louis, Missouri; for continuing studies of the relationship of dietary factors to the production of adrenal steroid hormones.

The adrenal cortex is known to be influenced by certain nutritional factors. The author has shown that pyridoxine deficiency, induced by the vitamin B_6 antagonist, desoxypyridoxine, results in enlargement of rat adrenal and depletion of lipid in the adrenal cortex. This study will involve the influence of this and other deficiencies on steroid secretion by isolated adrenal glands of the deficient animals.

R. S. Goodhart, B. F. Chow and S. A. Tauber, The Nutrition Clinics Fund, New York, New York; for continuation of studies of B_{12} and B_6 metabolism in the aged.

Clinical and laboratory facilities at a Home for the Aged have been established and research is being conducted on various aspects of the nutritional status of elderly persons. Studies are underway on the influence of vitamin B_{12} nutritional status on fat and carbohydrate absorption and metabolism; in addition, the adequacy of the pyridoxine reserves of the aged will be measured.

George J. Gabuzda, Western Reserve University, School of Medicine, Cleveland, Ohio; for continuing studies of the metabolism and interrelationship of folic acid, citrovorum factor and ascorbic acid.

Homocysteine and ascorbic acid play a role in the *in vitro* conversion of folic acid to citrovorum factor, the biologically active form of the vitamin. Experiments are planned to define in more detail the reactions involved in the conversion system.

Albert L. Lehninger, The Johns Hopkins University, School of Medicine, Baltimore, Maryland; for further studies of enzymatic and genetic aspects of ascorbic acid synthesis in animal tissues; biological function of ascorbic acid.

Previous studies on this project have revealed details of the pathway of conversion of D-glucuronic acid to L-ascorbic acid (vitamin C) in animal tissues. Further work to fill in gaps in knowledge of the system is planned.

Herman C. Lichstein, University of Minnesota, The Medical School, Minneapolis, Minnesota; for continuing studies of compounds structurally related to biotin for the study of the mechanism of action of biotin.

Further studies are projected in which the ability of analogues of biotin to allow growth in biotin-dependent microorganisms will be correlated with their ability to replace coenzyme activity.

O. Neal Miller, Tulane University, School of Medicine, New Orleans, Louisiana; for continuing studies on the metabolism of Vitamin B_{12}.

Numerous studies on the metabolism of vitamin B_{12} have revealed that intrinsic factor of normal gastric juice is necessary for the absorption of the vitamin. In addition, it is known that the vitamin exists in a bound form in serum for which a "serum factor" is necessary.

The manner in which homodjenkolic acid stimulates growth in *Ochromonas malhemansis* when vitamin B_{12} is present will be explored further. In addition, the ability of intrinsic factor will be studied with regard to its effectiveness in increasing the uptake of vitamin B_{12} by tissues other than intestinal mucosa.

Robert E. Olson, University of Pittsburgh, Pittsburgh, Pennsylvania; for continuing studies of the role of dietary protein, choline and fatty acids in controlling serum lipid and liproprotein levels in rat and man.

The proposed study involves the determination by means of isotope turnover studies, of the mechanism of the effect of diets deficient in labile methyl groups upon serum lipid levels in the rat and the diet composition which will elicit maximum hypocholesterolemia in man without weight loss or negative nitrogen balance.

Joseph Seronde, Jr., Laboratory of Comparative Pathology, Maynard, Massachusetts; for a morphological investigation of ulcers and other duodenal changes arising in adult pantothenate-deficient rats.

It has been demonstrated by others that pantothenic acid deficiency in the rat results in duodenal ulcers which may be prevented by adrenalectomy. Detailed nutritional and pathological study of the development of the changes in the gastrointestinal tract will be undertaken in an attempt to shed light on ulcer formation.

Theodore L. Sourkes, McGill University, Montreal, Quebec, Canada;

for studies of the role of nutritional factors in the formation of catecholamines.

An etiology of psychoses has been postulated by certain investigators on the basis of an error in the metabolism of catecholamines. Changes in tissue and urinary catecholamines will be measured on rats subsisting on diets deficient in certain amino acids; the effects of supplementation with various precursors of catecholamines will be noted. The effect of vitamin B_5 deficiency on the production of these neurohumors will be studied as will the effect of electroshock.

Walter G. Unglaub, Tulane University, School of Medicine, New Orleans, Louisiana; for studies of pyridoxine metabolism in pregnancy, with particular reference to arteriosclerotic changes in placental vessels.

Vitamin B_6 deficiency in the monkey has resulted in the development of arteriosclerotic changes. The role of this vitamin in the production of arteriosclerosis in man is inknown and is in need of investigation. The human placenta may offer an approach to this problem since it has a marked tendency to develop sclerotic changes in the arteries within a relatively short period of time. It is planned to evaluate the extent of sclerotic lesions in these vessels in terms of the occurrence and severity of Vitamin B_6 deficiency in pregnant women.

Theodore F. Zucker, Columbia University, College of Physicians and Surgeons, New York, New York; for continuing studies of immediate versus remote results of pantothenic acid deficiency in adult rats.

Pantothenic acid deficiency in adult rats results in increased gastric acidity, duodenal ulcers, excessive porphyrin excretion from the Harderian glands, thymus gland involution. These are all prevented by adrenalectomy but not by medullectomy, thus implicating the adrenal cortex, and, in fact, cortical hormone restores these changes in the deficient adrenalectomized rat. Corticoadrenal-cholinergic interrelations will be studied in the pantothenate deficient rat in an attempt to explain these changes on a unitarian basis.

Supplementary grants were given to aid the research of Robert Hillman of the State University of New York, Brooklyn, New York and Dr. George Wolf of the University of Illinois.

Pharmaceutical Prices

I had to buy 15 cc. of a hydrocortisone lotion and took off straight through the roof of the pharmacy when I was hit for $8.00. This comes to $16.00 an ounce, or almost half the price of pure gold, but I must admit that the product was almost miraculously effective in a disfiguring skin condition. I looked into the matter a bit further and it works out like this: the retail price is $8.00 for the 15 cc. package of 2.5 per cent hydrocortisone lotion; the Fair Trade minimum is $7.20; the wholesale price to the pharmacist is $4.80. The preparation, in 15 cc., contained 375 mg. of hydrocortisone, available in bulk at $4.50 a gram, and the active ingredient was therefore valued at $1.69. Considering the cost of other ingredients which is certainly small, and manufacturing and packaging costs which are not small, the manufacturer's markup is by no means unreasonable; in fact, it's surprisingly small. At this point I don't know the answer, but the manufacturer is being blamed for a distribution system over which he has no control but which generates ill will for him.

Phenyltoloxamine Tranquilizer

Phenyltoloxamine, long distributed by Bristol Laboratories as a non-prescription antihistamine has been found to be an effective tranquilizer. As a consequence, the company has withdrawn the compound as an over-the-counter antihistamine and reissued it under the name of PRN for dispensing only on prescription.

Clinical studies with the drug were described by A. Sainz of the Research Department of Marcy State Hospital at a special meeting of the Mohawk Valley Neuropsychiatric Society.

The study, covering some 275 cases of various types of serious mental illness, indicates that the drug is "not only safe but remarkably free from undesirable reactions" at the requisite dosages.

A group of chronic cases covered in the study numbered seventy-two patients 45 to 78 years old, of the type regarded in mental hospitals as "burned out." "Good" or "fairly good" results were obtained from the new drug in fifty-five cases, or seventy-six per cent. An interesting sidelight on use of the drug in this chronic group is that the women are benefited in a ratio twelve-to-one over men.

A still better statistical showing was made by the new drug on twenty-three patients suffering from stress reactions. Good results were achieved in twenty cases. The new drug produced improvement in only twelve of 110 patients suffering from focal brain damage, and a further group of twelve patients manifesting severe neurotic anxiety was not benefited.

The new drug's action was described as similar to that of reserpine except for the notable absence of toxicity and undesirable side effects, including depression, mental cloudiness, and confusion. "Addiction and withdrawal symptoms have not been noted after six months continued high dosage in certain patients," the report stated. The powerful effects of the new drug on the central nervous system were deemed not connected with its previously established antihistaminic properties.

British Polio Vaccine

The Poliomyelitis Vaccines Committee, under the chairmanship of Professor C. H. Stuart-Harris, has reported to the Medical Research Council on the assessment of the British vaccine against poliomyelitis (*Brit. Med. J.*, 1957, 1, 1271). In two age groups (5½ to 9 years and 1½ to 5 years), each comprising over 74,000 children who each received two injections of vaccine, the observed incidence of paralytic disease up to January, 1957, was only about one-fifth of the incidence in unvaccinated children. The vaccine used contained the Brunenders type I, MEF-1 type II, and Saukett type III strains. A total of 400,000 injections were given in May and June, 1956, with no ill-effects. British results compare favorably with those obtained in America, despite the substitution of the Mahoney strain by the less virulent Brunenders type I.

Estradurin (Ayerst) is a brand of polyestradiol phosphate, a long-acting estrogen for the treatment of prostatic carcinoma. Each package provides 40 mg. of the estrogen in dry form an a 2 cc. ampoule of sterile diluent.

Compounders Corner

Arcofac (Armour) is an emulsion of unsaturated fatty acids as supplied by safflower oil and pyridoxine hydrochloride for use as a dietary supplement in deficiencies of essential fats. Each 15 cc. contains 6.0 grams of essential fatty acids derived from safflower oil and 0.6 mg. of pyridoxine hydrochloride; the preparation is being sold in 12 ounce bottles.

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Perfume Specialties

Essential Oils

Aromatic Chemicals

Compounder's Corner

Skin Treatment Cream

U. S. Patent 2,791,534 was issued on May 7, 1957 to F. Schaaf and F. Gross and assigned to Ciba, and covers the use of pregnenolone in cosmetic preparations. A patent claim covers an emulsified preparation for the skin including 0.1 to 1.0 per cent of pregnenolene, its benzyl ether or fatty acid esters in a non-toxic absorbable cosmetic emulsion base.

The inventors claim to have found that pregnenolone and its derivatives stimulate growth of epidermis and lead to an increase in the layers of epidermis cells and to cell proliferation accompanied by enlargement of the nuclei and cytoplasm. A number of additions to the skin formula are suggested to increase the action of the pregnenolone or to permit use of smaller quantities and the use of nicotinic acid amide is recommended to stimulate the circulation of the skin.

Suggested formulas are the following:

Pregnenolone	0.5
Stearic acid	20.0
Almond oil	2.5
Cetyl alcohol	0.8
Methyl paraben	0.2
Triethanolamine	1.8
Glycerin	5.0
Water	69.2
Glycerin	69.2
Pregnenolone	0.2
Beeswax	10.0
Hydrogenated peanut oil	10.0
Benzyl laurate	5.0
Spermaceti	5.0
Almond oil	35.0
Lanolin	2.5
Sorbitan sesquioleate	1.7
Cholesterol	0.8
Glycerin	3.0
Magnesium sulfate	0.2
Borax	0.6
Water	26.0

Antiperspirant Patent

U. S. Patent 2,790,747 was issued April 30, 1957 to F. M. Berger and S. L. Plechner and assigned to Carter Products and covers a perspiration inhibiting preparation comprising the combination, in an aqueous carrier, of at least one zirconium salt selected from the class consisting of sodium zirconium lactate, sodium zirconium glycolate and sodium zirconium gluconate and at least one zirconium salt selected from the class consisting of zirconium glycolate and zirconium gluconate, said preparation having a pH in the range of 2.5 to 5.5. The patent application was filed August 6, 1952 and a formula given as an example is the following:

Petrolatum	1.0
Spermaceti	3.0
Glyceryl monostearate	13.0
Glycerin	10.0
Water	44.0
TEA salt of alkylaryl sulfonate	10.0
Polyoxyethylene sorbitan monostearate	3.0
Titanium dioxide	1.0
Zirconium glycolate	5.0
Sodium zirconium glycolate	10.0

Sesame Oil Antioxidant

According to a note in a paper by J. H. Kraft, reproduced in *Chemurgic Digest*, 16:13, April, 1957, sesame oil may be useful in blends to increase the stability of other oils. This is due to the presence of a natural antioxidant seamsol, a hydrolytic product of sesamoline. Blends of 1, 2 and 3 per cent of sesame oil with cottonseed oil increased the keeping time of the mixture 5, 9 and 19 per cent, respectively.

Comment: This fact may be worth further investigation where unsaturated oils are used in cosmetics and pharmaceuticals, especially in emulsions where the oils are particularly vulnerable to oxidation.

Carbopol Cream

I have just seen a cream containing 50 per cent of mineral oil that looks much like a beeswax-borax product but really contains little in addition to mineral oil. Shelf life, without oil leakage, seems to be quite satisfactory. The cream is made with Carbopol 934 and displays that material as a useful emulsifier as well as a thickening agent. By using combinations of a water-soluble alkali and an oil-soluble amine it is apparently possible to orient the Carbopol at the oil-water interface to act as an emulsion stabilizer. The cream may be made in the following way: To 50 grams of mineral oil in an efficient stirrer such as the Waring Blendor add 50 grams of a 1 per cent solution of Carbopol 934. With continued agitation add 0.35 gram of dodecylamine and then 0.2 gram of sodium hydroxide dissolved in a little water. The result is a thick, stable cream. Reduction proportionately (dilution with water) of the oil, Carbopol, amine and alkali gives a lotion-type product.

Propioloctone Sterilizer

Beta-propiolactone according to F. W. Hartman and G. A. LoGrippo (J. A. M. A. 164:258, 1957) is a superior sterilizing agent for biologicals because of its rapid and irreversible action, minimal alteration of proteins, and complete hydrolysis, obviating neutralization and toxicity. Preservation of proteins and relatively nontoxic end-products of hydracrylic and beta-chloropropionic acids makes beta-propiolactone the most promising chemical for the sterilization of blood plasma. Rapid killing of bacteria and inactivation of viruses with maintenance of comparatively high antigenicity offers a method for the production of improved vaccines. Activity on a wide variety of bacteria, fungi, and viruses, coupled with rapid penetration of tissues, opens the way for safer and more plentiful homogeneous tissue grafts of arteries, bone, and cartilage.

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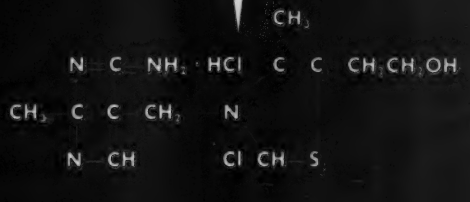

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(Illustration represents actual crystals under high magnification, using shadow technique.)

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(vitamin B_1)

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2. **TWO TYPES.** Roche has *two types* of thiamine hydrochloride available for you:

   Regular—*for tablets, capsules, dry and liquid nutritive supplements and multivitamin preparations.*

   Ampul—*specially prepared for use in manufacturing parenteral solutions.*

3. **SPECIAL PROBLEMS.** Roche has thiamine mononitrate to help you meet unusual stability problems which can occur in dry cereal or pharmaceutical products. Also it may have advantages in certain pharmaceutical products where the pH range is above the safe level for the hydrochloride.

4. **STEADY SUPPLY.** Because Roche makes *quality* thiamine by the tons, you can be sure of a steady, *quality* supply.

5. **RESEARCH.** Continuing world-wide research brings you the latest developments in vitamin knowledge.

6. **PRODUCTION CONTROL.** Scientific production control assures you of consistent, highest quality.

7. **QUICK DELIVERY.** Every order receives prompt careful service from convenient points. Transportation at lowest rate allowed and prepaid to destination. Special routings at cost. And you *know* you can count on our promises.

8. **PACKAGING.** Packed in polyethylene bags in ½ and 1-kilo tamper-pruf metal containers and in fibre drums up to 20 kilos for the hydrochloride, 35 kilos for the mononitrate. Small quantities in amber S.C. bottles. *Ampul type* thiamine hydrochloride is sealed under inert gas in 100 gram S.C. bottles and in ½ and 1-kilo tamper-pruf metal containers.

9. **KNOW-HOW.** Roche know-how on vitamins can help you with solutions to compounding and packaging problems.

10. **SAMPLES** and technical assistance are yours on request. Ask your Roche salesman or write the Vitamin Division.

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Comment: This compound is certainly worthy of investigation for special sterilization jobs of sensitive materials: investigations have now been under way for several years and the procedure offers considerable promise. Ethylene oxide is being successfully applied to the problem of sterilizing (removing virus and fungi) dry penicillin preparations which cannot be heated without deactivation. Ketene and its dimer, dikelene, it seems to us might be useful in the same application.

Brominated Vegetable Oil

The stability of an emulsion, or at any rate its rate of separation, is dependent upon viscosity, particle size and difference in specific gravity between the two phases. Seldom is it possible to modify the specific gravity relationship, but this can be done with brominated vegetable oil, available from Dominion Products, Inc., Long Island City, N. Y. This oil has a specific gravity of 1.33 and is miscible with essential oils and other oils used in formulating cosmetic and pharmaceutical emulsions. It may be used to make the oil phase of an emulsion heavier, and thus retard separation of phases.

Silicone Polymers

Dow Corning has developed Syl-Kem 21, pentamethyldisiloxanemethyl methacrylate, which undergoes many of the reactions typical of methacrylate esters. The chemical can be used to make polymers and copolymers with unusual bonding and surface characteristics. The compound is a liquid which polymerizes readily in bulk, emulsion or suspension to a clear, tough plastic soluble in acetone or benzene. When copolymerized with acrylonitrile, styrene, vinyl acetate or methylmethacrylate, Syl-Kem gives plastics with unusual surface properties. Polymers of the original compound are highly water-repellent; copolymers exhibit somewhat less water repellancy. Our own suggestion is that perhaps among copolymers might be found one with alcohol solubility and water repellency applicable to aerosol hair setting preparations.

Hair Dye Sensitivity

Patch tests were performed with solutions of certain black hair dyes by F. Reiss, M. Gahyyler and B. Lustig (*J. Allergy* 28:131, 1957) on 1,024 hospitalized male and female patients who were free from any skin disorders and did not have a history of allergic disease. None of the patients tested had previously used hair dyes. Of the 3 test solutions, the 1st contained paraphenylenediamine as the main ingredient, the 2nd contained paratoluylenediamine, and the 3rd solution contained soaps, detergents, ammonia, and resorcinol, but no aromatic amines, and was used for control. The black hair dyes were used because they contained the highest concentration of aromatic diamines. Of the 8 persons found to be sensitive, 3 reacted only to the black hair dye containing paraphenylenediamine, 4 reacted only to the black hair dye containing paratoluylenediamine, and 1 reacted to both dyes. Three of the sensitive persons were men, and 5 were women. Age seemed to be related to incidence of sensitization. Only 1 of 516 patients aged 50 years or younger was found to be sensitive to the paraphenylenediamine hair dye. The remaining 7 reactors were over 50 years of age, and their positive reactions to the skin tests with hair dyes might have been due to cross sensitization to related compounds. Two of 4 sensitive persons tested had positive skin reactions with 2 per cent solution of aqueous procaine hydrochloride. The patch test is essential, therefore, to any person contemplating hair dyeing.

Antibacterial Hair Spray

I think this product idea is worthy of attention from the promotion people looking for new hooks for copy. Why not include about 0.1 per cent or less of hexachlorophene, bithionol, TMTD or other compatible antibacterial agent in aerosol hair setting formulas? Such an addition should certainly have some deodorant value for hair, preventing the bacterial decomposition of perspiration from the scalp and development of perspiration odor. The antibacterial action might even be useful in retarding the development of dandruff.

New Vitamin B-12 Source

Vitabusch 12, a new vitamin B-12 preparation made especially for the food and pharmaceutical industries by a new process is now being marketed. Anheuser-Busch, long a leading producer of natural B vitamins through its dried food yeast manufacture, has spent several years developing the new process in which food grade vitamin B-12 is produced as the primary product in easily recoverable form. The process should fill a need for an inexpensive source of vitamin B-12.

Hair Setting Composition

U. S. Patent 2,793,980 was issued to K. H. Mamlok and M. H. Schwartz on May 28, 1957 for a hair setting combination consisting of water, PVP, urea and triethanolamine, a typical formula consisting of 2.5 parts of PVP, 1.25 parts of urea, 1.25 parts of TEA and 95 parts of water. Triethanolamine and urea swell the hair and break the hydrogen and salt bonds of hair keratin so that, according to the patent, the PVP tends to be deposited within the hair shaft. The hair is said to be particularly easy to handle and the set to have unusually long life.

Dry Skin Cream

The new Lady Esther Dry Skin Cream is claimed to eliminate "drychosis," a term created to describe dry skin. "Drychosis" is to be eliminated by the creation of a long-lasting reservoir of natural lipid substances in the outer layers of the skin. This reservoir is thought to enable the skin to restore and maintain its proper oil and water balance. A national advertising campaign is backing up this new name, and cosmetic sales girls are being labelled "drychiatrists." Now all that's needed is Wayne King to bring back the glories of the "bite test."

Tetracycline Complex Patent

U. S. Patent 2,791,609 was issued May 7, 1957 to M. A. Kaplan covering tetracycline sodium hexametaphosphate complex. The complex is said to give higher blood levels in dogs and man upon oral administration in capsules than do the forms of tetracycline previously in use, is non-toxic and stable in the dry state. Claims cover tetracycline metallo-hexametaphosphate complex in which the phosphate is the sodium or potassium compound and a process of mixing an aqueous solution of tetracycline with an aqueous solution of sodium hexametaphosphate, both solutions having a pH below about 2.0.

Saff (Abbott) is a fat emulsion containing 65 per cent of safflower seed oil, 8 per cent sucrose, 1 per cent of sodium benzoate, 0.003 per cent of citric acid and 22 per cent of water, with polyethylene glycol distearate and sodium lauryl sulfate as emulsifying agents. Since the preparation contains 46 per cent of linoleic acid glyceride, it is suggested as an aid in the management of atherisclerosis as well as a dietary supplement. It is supplied as one pint bottles.

FANCY

POLYNESIAN'S NOSE

Strange adornments like bones thrust through the nostrils have a very special meaning to a Polynesian.

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THE NOSE – FANCY AND FACT

FACT

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Skin Research

The Society for Investigative Dermatology

The following are abstracts of papers presented at the meeting of the Society for Investigative Dermatology in New York City on June 1 and 2.

Previous endeavors at electonr microscopy of human epidermis were thwarted primarily by the inherent difficulty in obtaining adequate fixation of skin. In this study by *G. F. Odland,* samples of human glabrous skin from several normal adults have been examined with an R.C.A., Model E.M.U. 2c electron microscope. The findings of K. Porter were confirmed and extended with respect to the variations in human skin. Original observations concerning the interrelationships of epidermal cells to one another and to melanocyte processes were presented.

R. K. Winkelman presented a complete morphologic description of the mucocutaneous end organ of the cat.

With the aim of establishing a readily transplantable strain of epidermal cells, experiments were performed by *G. W. Hambrick, Jr. and R. Bloomberg* to determine the viability or growth of human skin, its appendages and its tumors in heterologous hosts. The technique of implantation into the subcutaneous tissue of the hamster's pouch has been used.

The purpose of the work by *C. E. Wheeler, C. M. Canby and E. P. Cawley* was to try to grow normal human epidermal cells in continuous long-term tissue cultures as a medium of support of some dermatropic viruses which do not appear to multiply in HeLa cells. Normal human epidermis was separated from dermis by means of trypsin and the separated epidermal cells were broken apart and placed in roller tubes containing human serum, salts, chicks embryo extract, penicillin and streptomycin. On the tenth attempt one of the tubes containing cells removed from normal skin of a normal seventeen year old boy showed an island of epithelial-like cells. In five months this small island of cells has given rise to a tremendous number of cells, being subcultured thirteen times and having produced over 400 tubes containing large numbers of cells. The cells resemble epithelial cells in appearance but they have a number of the morphologic features and proliferative capacity of cancer cells such as the well-known HeLa cells demonstrate. So far these cells have supported the growth and multiplication of the viruses of vaccinia and three strains of herpes simplex in which the typical cytological changes of these viruses have been produced.

An important factor in determining whether or not an organism can grow on the cutaneous surface is the water content of the cornified epithelium. If pieces of callus are allowed to absorb varying amounts of water, it was found by *I. H. Blank and R. K. Dawes* that organisms will grow on them only when the water content is above a certain level. For instance, the micrococci which are part of the resident flora grow well if the moisture content exceeds 20 per cent. Below 20 per cent the micrococci will not multiply. A piece of callus which has a moisture content adequate to support growth may be so altered by the application of antiseptic that it will no longer support growth. Thus a method for *in vitro* study of the bacteriostatic effect of various antiseptics is available.

It seems possible that aberrations in nucleic acid metabolism may be associated with diseases involving abnormal keratinization since ribonucleic acid (RNA) appears to play a role in protein synthesis. In addition, available evidence indicates that ironizing radiation interferes with the metabolism of deoxyribonucleic acid (DNA)—this "biochemical lesion" being in some way related to cessation of mitosis, cellular degeneration and the other visible signs of radiation damage. Using the radioactive tracer technique, *I. A. Bernstein and P. Foster* investigated the normal metabolism of RNA with ultimate purpose of looking for metabolic abnormalities in these pathologic conditions.

Analysis of the lipid content of lesions in steatocystoma multiplex revealed that the chemical conposition of this liquid mixture is very similar to that of human fat when comparison is made of the total acids, squalene, cholesterol and total wax alcohol content. However, in the lipids of steatocystoma *all* fatty acids were esterified. In contrast, surface fat collected from the scalp as early as one-half hour after previous thorough defatting showed 20 per cent free fatty acids (expressed in percent of the total weight of fat.) This difference was explained by N. *Nicolaides and G. C. Wells* by postulating an esterase (lipase) present in the sebaceous gland duct or in the hair follicle or on the skin surface. This enzyme could be responsible for secondary splitting of esters with formation of free fatty acids while such enzyme activity seems to be absent in cysts in which sebum has no contact with open channels.

Using a chromatographic principle of separating cholesterol from its esters by chromatographic procedures, studies were made by *D. B. Windhorst and R. C. Foster, Jr.* of the relative and absolute amounts of these substances in human skin surface liquids.

The oxygen uptake of epidermis was determined to be several times greater than that of dermis by *E. Leibsohn, B. Appel, W. Ulrick and M. J. Tye.* Values for oxygen uptake were determined for clinically normal skin in male and female adults, white and Colored. Values were also determined in skin affected with dermatitis venenata, neurodermatitis ("eczema") and in skin modified by certain therapeutic agents.

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The anticholinesterase agent, sarin, was used in a study by *I. H. Blank, R. D. Giresemer and E. Gould* of the permeability of excised human skin obtained at atuopsy. The effects of the following factors on the rate of penetration of sarin into the dermis of excised human skin were investigated: 1) amount of sarin applied, 2) duration of contact with epidermis, 3) temperature, 4) trauma, and 5) liquid-vapor state of sarin.

The effects of rabbit skin homogenates on the autoxidation of glutathoine and cysteine were studied by *H. R. Rony, G. J. Scheff, D. M. Cohen and W. R. Rennagel* using the Warburg technique. It was found that the effects varied from marked inhibition to marked acceleration. Homogenates prepared from skin in the inactive phase of the hair growth cycle showed a tendency toward inhibition of sulfhydryl oxidation, as compared with homogenates prepared from skin in the active hair-growth phase which showed a tendency towards acceleration. It is suggested, on this basis, that the sulfhydryl oxidase activity in skin homogenates is connected with the keratinization process in view of the fact that keratinization proceeds more intensively during the active phase than during the inactive phase. However, the parallelism of the two processes is far from being strictly consistent, indicating that a role in the sulfhydryl oxidase activity of skin homogenates is played by factors other than those involved in keratinization. The possible significance of sulfhydryl oxidase inhibitors in the regulation of keratinization was discussed, and a theory proposed concerning the close relationship between the rate of pigment production and the rate of keratinization during the growth of pigmented hair. After stripping normal human skin by the adhesive cellophane tape method it was found by *F. D. Malkinson* that 55-65 per cent of topically applied hydrocortisone-4-C^{14} penetrates the epidermis within one hour. Comparable studies with 4-C^{14} cortisone acetate, however, have shown no appreciable absorption. Similar studies with testosterone-4-C^{14} were also described. The further use of these C^{14} labelled steriods for observations of the effects of ultraviolet light erythema on their cutaneous penetration, for determinations of barrier regeneration time in normal human skin, and for studies of the percutaneous absorption of these hormones in patients with inflammatory dermatoses were reported.

The paper by *A. M. Kligman and W. B. Shelley* is primarily intended to display the fallacy of the feed-back concept which has dominated thinking about the sebaceous gland's secretory function. It has been held that the surface lipids regulate the secretory activity of the gland by exerting a braking counterforce proportional to the thickness and viscosity of the surface film. It has come to be universally accepted that the gland starts to secrete when the surface film is removed by defatting and gradually shuts down as its products accumulate on the surface, finally reaching a standstill when the orignial film has been replaced. A variety of experiments were described, the results of which are incompatible with the above concept. The authors substitute the simple notion that the sebaceous gland produces sebum continuously, at a relatively constant rate. Its activity is not influenced by the surface fat layer. The continuous production of sebum is comparable to the manner in which the other cutaneous holocrine organs function namely the hair, nails, and epidermis.

The histopathologic changes of the human sebaceous gland following various types of stimuli were studied by *J. S. Strauss and A. M. Kligman* in serially sectioned biopsies of the face and scalp in order to gain insight into the way in which the sebaceous gland responds to disease (comedo formation and in wound healing). The pilosebaceous apparatus tends to react as a unit; limited damage to the upper portion of the follicles is followed in a more or less stereotyped fashion by replacement of the mature sebaceous cells by immature cells of the basal cell type. The lobules become filled with these undifferentiated epithelial cells which do not undergo sebaceous transformation. Prolonged horny obstruction and dilatation of the follicle eventually lead to athrophy and disappearance of the glands.

Biopsy specimens obtained from the backs of young adult males immediately before, at various intervals during, and after six hours of profuse sweating were studied using a variety of histochemcial staining procedures. By these methods alterations due to sweating in the eccrine sweat gland were observed by *R. L. Dobson, V. Formisano, W. C. Lobitz, Jr., and D. Brophy*. Both the secretory portion of the gland and the coil portion of the duct participated in these changes. After sweating the secretory cells themselves (especially the large pale cells), became atrophic, irregular in shape and vacuolated. Their nuclei became distorted, contained increased chromatin material and developed a thickened nuclear membrane. The basement membrane became thickened and had an undulating appearance. As a result of these changes a gross morphological alteration of the secretory coil was produced.

There is no general agreement as to the site of origin of basal cell epitheliomas according to *M. G. Wood, K. Pranich, and H. Beerman*. Casual inspection of routine biopsy specimens, as well as the more meticulous techniques of serial sections and replica studies, indicate that many epitheliomas takes origin from cells in the upper portion of apparently mature follicular structure. The tumor cells appear to originate, or at least are continuous with, cells in the neck of the follicle in the region of the pilo-sebaceous orifice. As this is the area from which the apocrine glands also take origin in the axillary, nipple and genital regions in man, and over a more generalized distribution in the lower species, it is easily conceivable that epitheliomas arising from this area might show an apocrine component.

As part of a continuing study of mast cells, the present investigation was undertaken by *J. Fan and E. C. Krobock* to ascertain the effect of systemically administered radioactive substance (P_{32}) on the dermal mast cells of rats. It was found that: 1. The variation of number of mast cells of experimental animals was observed to be statistically of little significance. 2. A partial degranulation of mast cells was observed in the specimens of the first day and became more marked after the second day. In all specimens of the experimental group, the mast cells contained fewer metachromatically stained granules in the superficial dermis than those in the deeper parts of the dermis. 3. In contrast with the normal tissue, where the mast cells were quite uniform in size and staining, they became uneven in size and shape and stained irregularly after injection.

The purpose of the study by *S. E. Landy et. al.* was to investigate the serologic patterns obtained many years following adequate therapy of early syphilis. It was found that the treponemal tests may remain reactive for many years following adequate treatment of early infectious syphilis, as long as twelve years after the nontreponemal tests have attained seronegativity.

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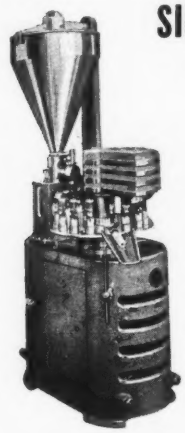

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Tranquilizing Drugs, *Arranged and edited by Harold E. Himwich, American Association For The Advancement Of Science, Washington, D.C., (1957), 197 pp., Cloth,* **$5.**

This is a symposium held under the auspices of the American Association For The Advancement of Science in Cooperation With The American Psychiatric Association and The American Physiological Society and Presented at The Atlanta, Georgia, Meeting, December 27-28, 1955. The discussions are arranged under the following main classifications: Electrophysiological Analysis of Tranquilizing Drug Action—Metabolic Analysis of Drug Action—Therapeutic Considerations Regarding Tranquilizing Drugs.

Light, Vegetation And Chlorophyll, *by J. Terrien, G. Truffaut and J. Carles, Philosophical Library, New York, (1957), 228 pp., cloth,* **$6.**

This exposition of present day knowledge of photosynthesis and related subjects consists of a translation from the French of two important works, namely: Lumiere et Vegetation, by Jean Terrien and George Truffaut, and L'Energie Chlorophyllienne, by Jules Carles. The first work is concerned chiefly with the nature of light as a form of energy and the light-requirements of plants in different parts of the world and under different climatic conditions. The second work deals largely with the chemistry of chlorophyll and photosynthesis. There is also a useful summary of the importance of chlorophyll in the present-day world.

Men Of Medicine, *by Katherine B. Shippen, The Viking Press, New York, (1957), 220 pp., cloth,* **$3.50.**

This starts with "The First Physicians" and carries through to "A fleck of Mold"—the discovery of penicillin by Dr. Alexander Fleming. It follows more or less the routine line of all such stories and, as with most of them, it is readable and interesting.

The Fight For Fluoridation, *by Donald R. McNeil, Oxford University Press, New York, (1957), 241 pp., cloth,* **$5.**

The impact of the fluoridation struggle has had far-reaching effects on the social and political equanimity of hundreds of towns and citis in this nation. For this absorbing history of fluoridation the author studied all the important published literature on the subject from 1916 to 1956 as well as original manuscripts and the correspondence of the leading figures. This book makes interesting reading for anyone interested in the subject.

Commercial Waxes, A Symposium and Compilation, *Edited by H. Bennett, Technical Director, Glyco Products Co., Inc., 2nd Ed., Chemical Publishing Co., Inc., New York, (1956), 688 pp., cloth,* **$15**

Since the publication of the first edition of this work, the applications of natural and synthetic waxes were further expanding in a great many industrial fields, new wax formulations and wax and resin blends have been developed, and new data have accumulated. All this information is included in this revised edition. Contents: 1. Natural Waxes. 2. Manufactured and Synthetic Waxes. 3. Physical Properties of Waxes and Wax Compositions. 4. Wax Technology. 5. Waxes In Industry. 6. Glossary, Special Tables, and Substitutes. 7. Wax Formulary. In the

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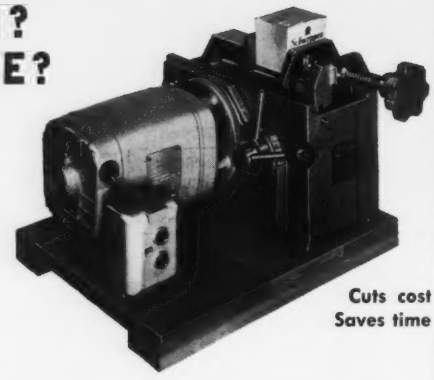

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formulas of various industrial products included in Chapter 7, all types and quantities of waxes are used. These formulas have been collected from volumes 1-9 of The Chemical Formulary edited by the author.

Gas Chromatography, *by A. I. M. Keulemans, Research Chemist, Koninklijke/Shell-Laboratorium, Amsterdam, 217 pp., Reinhold Publishing Corp., New York (1957), cloth,* **$7.50.**

This book shows you how to identify the individual components of a gas or vapor in a way that is rapid, positive, reliable, and accurate. Because of the kinship between the subjects covered and the analysis of gases, liquids and vapors, the book will find use in many diverse applications Industries manufacturing chemicals, beverages, food products, oils, paints, perfumes, cosmetics, pharmaceuticals, plastics and rubber goods will likewise gain amazing advantages from the contents of this work.

Antibiotics Annual—1956-1957 *—Edited by Henry Welch, Ph.D., and Felix Marti-Ibanez, M. D., Medical Encyclopedia, Inc., New York, (1957),* 1133 *pp., Cloth,* **$10.**

This is the proceedings of the Fourth Annual Symposium On Antibiotics sponsored by U. S. Department of Health, Education, and Welfare, Food And Drug Administration, Division of Antibiotics, in collaboration with the journals Antibiotics & Chemotherapy and Antibiotic Medicine & Clinical Therapy. Practically an entire day of the three day meeting was given over to a discussion of antibiotics as food preservatives. Five new antibiotics are described: ristocetin, PA 132, Bryamycin, vancomycin, and amphomycin.

Connective Tissue In Health And Disease, *Edited by G. Osboe-Hansen, M. D., University Institute of Medical Anatomy, Copenhagen, 321 pp., Philosophical Library, New York, (1957) cloth,* **$15.**

Twenty-three prominent and well-known contributors from different parts of the world here present the current status and significance of connective tissue science. Recent advances within morphology, chemistry and physiology of the ubiquitous connective tissues have brought revolutionizing aspects into pathology, endocrinology as well as general medicine and surgery. New light has been thrown on the processes of wound and fracture healing, on infection, cancer growth and invasion, as well as arteriosclerosis and aging. Systemic connective tissue diseases play a dominant role in modern dermatology, rheumatology and ophthalmology. The connective tissue has demanded increasing interest and attention during the last decade. This work is a reaction to the general claim for competent information.

The Early Detection And Prevention Of Disease, *Edited by John P. Hubbard, M. D., 350 pp., The Blakiston Div., McGraw-Hill Book Co., (1957), cloth,* **$7.50.**

This work is designed for the physician and the medical student interested in the current status of knowledge concerning the measurement, maintenance, and improvement of health, the early detection of disease, prevention where prevention is possible, and the limitation of complications or disability. Twenty-eight eminent clinicians have thoroughly discussed the following: preventive medicine in clinical practice; preventive medicine in relation to the cardiovascular system, the gastrointestinal system, pelvic cancer, and selected diseases; norms of mental health and early detection of deviations from the norms; measurement of the health of the musculoskeletal system; a review of immunization; and the practical application of preventive medicine in the armed services.

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Xylopropamine Analgesic

S C. Harris and R. C. Worley (Proc. Soc. Exptl. Biol. Med., 95: 212, 1957) found that a new sympathomimetic drug, xylopropamine sulfate, can elevate the pain threshold of human beings. In 10 mg. oral doses, tested by a double-blind technique, the drug was statistically effective from 90 to 180 minutes after administration and after a short latent period. Despite the chemical similarity of the drug to amphetamine, differing only in the addition of methyl groups in the 3 and 4 positions of the benzene ring, xylopropamine is apparently not analeptic.

An anti-malaria drug called chloroquine has been found to be 70 per cent effective against rheumatoid arthritis and works in a completely different way from cortisone and its derivatives.

Tests of the drug on arthritic patients were reported by three international research teams headed by Dr. Robert E. Rinehart, Wheeler, Ore., Dr. Arthur W. Bagnall, Vancouver, B. C., and Prof. I. Bruckner, Bucharest, Roumania, to the Ninth International Congress on Rheumatic Diseases meeting in Toronto.

"Chloroquine differs from the more spectacular drugs such as cortisone and its derivatives in that it gives no immediate evidence of an anti-inflammatory effect on the joint swelling and pain," Dr. Bagnall said.

It appears to act by attacking the disease process in the body as a whole.

When used over a period of many months it continuously controls arthritic "flare-ups." This action is different from that of cortisone which is effective only while being taken, and once stopped, allows the inflammation in the joints to return.

The chloroquine was used in one group of patients for more than four years with no significant side effects except a drug rash in 10 per cent of the group.

The results were good in 70 per cent of Dr. Bagnall's cases and one-half of them now have no symptoms at all. *Science News Letter*

Chloroquine for Arthritis

Castor oil is one of the few fixed oils which owing to its unique composition has become an important source of perfumery chemicals.

When heated above 300° the ricinoleic acid in castor oil breaks down and forms heptaldehyde and undecylenic acid and it is this reaction which has made castor oil such an important raw material of perfumery chemicals.

Let us begin with the compounds obtained from heptaldehyde, or oenanthol as it is sometimes called. The most important of this group of compounds is amylcinnamic aldehyde.

The manufacture of amyl cinnamic aldehyde is based on a reaction in which benzaldehyde is condensed with heptaldehyde in presence of alkali

Amyl cinnamic aldehyde is a yellow oil which distils at 153-154°/mm and which has a strong floral odor strongly reminiscent of jasmin. Its main use is obviously in compositions of the jasmin type, and it is extensively employed in soap perfumes.

Heptyl Alcohol is another product manufactured from heptaldehyde. Although heptyl alcohol is not extensively used in perfumery as such, it has been employed in compounds of the jasmin and carnation type.

The esters of heptyl alcohol are far more useful than the free alcohol both in perfumery and in essence work. The manufacture of heptyl esters does not present any difficulty as they can be prepared by any of the standard methods for the preparation of esters. The following products have been used. Heptyl formate is an oil which is useful in orris notes and which has been employed in apricot, peach and plum flavors. Heptyl acetate has a floral fruity note which is useful in Rose perfumes, as well as in such flavors as pineapple, banana and pear. Heptyl propionate has a waxy note and is known to have been incorporated in Chypre and fern-type perfumes. Heptyl butyrate has a greenish-fruity odor, and is used in a variety of floral perfumes such as cyclamen, violet and rose, and also in certain fruit flavors. Heptyl phenylacetate is supposed to possess an odor reminiscent of lemon peel.

Oenanthic or heptoic acid is another material which can be manufactured from heptaldehyde. Certain esters of oenanthic acid are used both in perfumery and essence work, ethyl heptoate or as it is sometimes called ethyl oenanthate or oenanthic ether being the most widely used member of this group of compounds. It is employed in a variety of products, particularly in fruit flavors such as strawberry and grape, in flavors for spirits like arrak, rum and brandy and in perfumery for toilet waters. For the preparation of oenanthic acid heptaldehyde is oxidized with potassium permanganate in acid solution.

Another important material the manufacture of which is based on heptaldehyde is nonalactone, or so-called Coconut aldehyde or Aldehyde C-18. This product has a pronounced coconut note which makes it admirably suited for inclusion in nut flavors, and all other flavors requiring a nutty note. Coconut aldehyde has also been used in such perfumery products as tuberose and gardenia. In the first stage nonenoic acid is prepared from heptaldehyde and malonic acid in presence of a basic catalyst. In the second stage of the synthesis the nonenoic acid is converted to nonalactone by treatment with fairly concentrated sulphuric acid.

The acetals of heptaldehyde have also been used as perfume ingredients. They are prepared by heating heptal dehyde with the corresponding alcohol in presence of hydrogen chloride.

I. Dominica prima Adventus.

COUNTERPOINT

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Counterpoint, a form of musical composition originally devised for the singers of chants and later employed in the works of such noted composers as Palestrina, Bach and others, had as its melodic basis the rendering of one musical theme against another to create an effect that was fuller, richer and beautifully harmonious. Something of the same principle has been applied in the development of certain perfume compositions, only instead of a tonal medium the perfumer has substituted fragrance. Our perfume offering this month has been named COUNTERPOINT because it does represent a type of perfume in which one fragrance pattern has been skillfully balanced against another. In this composition our perfumers have used a warm, woody effect and an unusual combination of spices to complement a bright, brilliant motif of rose, lilac and jasmine. A beautifully balanced, harmonious effect is the result. From the sum of its floral constituents, COUNTERPOINT derives a delightful topnote, while judicious use of animal additives gives it excellent fixation. Moderately priced, COUNTERPOINT is especially suited for use in perfumes, toilet waters and colognes, or with slight modification for an entire line of cosmetics. We strongly recommend that you write us for a trial sample of this unique and very attractive fragrance.

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Sculpture, left, by Luca della Robbia, from the Singing Gallery, Opera del Duomo, Florence, Italy. — Courtesy Library of The Metropolitan Museum of Art.

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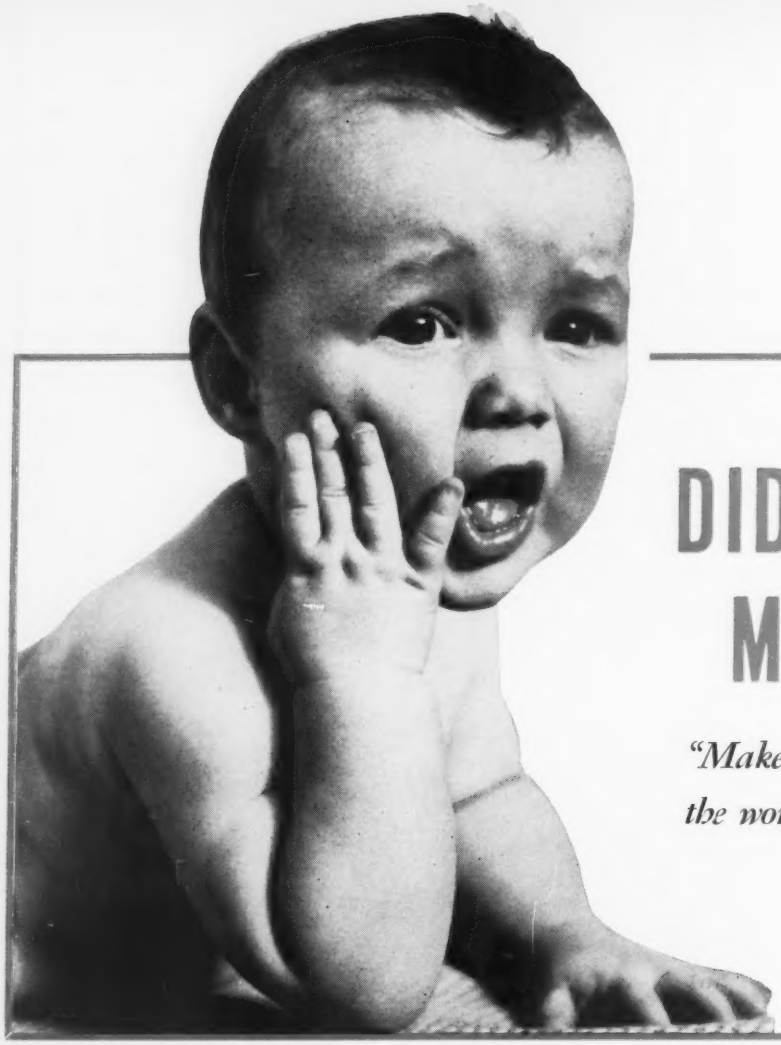

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Heptaldehyde dimethylacetal described as having a 'grass-like harsh odor' has been used in fern-like notes. The diethyl acetal of heptaldehyde which has a more pleasant green odor than the methyl derivative has been used in trefle and orchid perfumes.

By far the most important of products made from undecylenic acid is undecalactone or so-called peach aldehyde or aldehyde C.14. This material has a sweet very persistent odor reminiscent of peach, and accordingly its main use is in fruit flavors of the peach and apricot type. In perfume work undecalactone is known to have been used in the most varied compositions notably in acacia, gardenia, orris, jasmin, rose, violet and many other perfumes. It is particularly suitable for perfumes for scenting cosmetic preparations such as creams and lipsticks.

Undecalactone is prepared from undecylenic acid in the same way in which nonalactone is made from nonenoic acid, namely by treating the corresponding acid with a strong solution of sulfuric acid.

A few esters of undecylenic acid are useful ingredients of both perfumes and flavoring essences. Those which are used most frequently are the methyl, ethyl and benzyl esters.

Methyl undecylenate has a fatty aldehydic note which at the same time has a suggestion of lemon. It is mainly used in perfumes to which it imparts an aldehydic citrus note.

The ethyl ester while also having a fatty odor is quite fruity in character and has a decided musk-like note. It is very useful in floral compositions especially in rose perfumes, as well as in flavors.

Butyl undecylenate is more fruity in odor than the ethyl ester. It has been incorporated into liquer flavors, and various floral perfumes.

For the manufacture of these esters any of the standard methods for the preparation of esters may be chosen.

Methyl undecylenate apart from being a perfumery chemical in its own right is also an intermediate product for methyl undecylate. This product is obtained from methyl undecylenate by catalytic hydrogenation .

Methyl undecylate has been found very useful in the composition of honey-like notes both in flavors and perfumes. Ethyl undecylenate, like the methyl ester, is also a useful intermediate. When it is hydrogenated and the ethyl undecylate is reduced with sodium and alcohol, undecylic alcohol is obtained. The latter, because of its fine floral note, is widely used for colognes and floral perfumes. It can also be obtained by the hydrogenation of undecylenic alcohol.

Undecylenic alcohol has an odor reminiscent of, but somewhat more fatty than that of the saturated alcohol. It is used mainly in florals, and is prepared by the reduction of ethyl undecylenate. The alcohol is a starting material for a number of important aromatics. The 11-bromoundecanol from the alcohol and hydrogen bromide is a valuable intermediate in the synthesis of macrocyclic musks.

Undecylic aldehyde is prepared by heating undecylenic alcohol with a copper catalyst; the product, also known as aldehyde C-11, is highly valued as an ingredient to impart an aldehydic top not to floral perfumes. The corresponding unsaturated aldehyde, undecylenic aldehyde, has a similar waxy rose note and has found application in various floral perfumes. A cyclic ether lactone with 15 members in the ring and with a pleasant musk odor can be made from bromoundecylenic acid.—A. J. Krajkeman, *P.E.O.R.* 48: 23, 1957.

Perfume Mixtures

Laboratory and odor analysis indicate that jasmin contains a large proportion of benzyl acetate along with linalool, linalyl acetate, jasmone, indole, methyl anthranilate, amyl cinnamic aldehyde, farnesol, para cresol, eugenol and alcohols and aldehydes from the higher fatty acids. A synthetic jasmin can be made along the following lines:

Benzyl acetate	15.0
Jasmin absolute	10.0
Amylcinnamic aldehyde	6.0
Indol, 100 per cent	0.3
Linalool	8.0
Benzyl alcohol	15.0
Alpha ionone	5.0
Benzyl salicylate	5.0
Dimethylbenzylcarbinyl acetate	4.0
Rhodinol	5.0
Rose de Mai	2.0
Methyl anthranilate	4.0
Phenethyl alcohol	10.0
Paracresylphenyl acetate	2.0
Isojasmone	1.0
Rhodinol isobutyrate	0.5
Siam Benzoin 50 per cent	7.2

An important ingredient in erotic perfumes is tuberose whose chief ingredient is the honey-like methyl benzoate as well as methylsalicylate, eugenol, geraniol, farnesol, nerol, etc. A synthetic tuberose can be built up along the following lines:

Linalool	25.0
Tuberose absolute	5.0
Methyl salicylate	5.0
Isobutyl salicylate	3.0
Balsam Peru	10.0
Methyl anthranilate	3.0
Benzyl propionate	5.0
Benzyl alcohol	5.0
Methyl laurate	5.0
Coumarin	3.0
Isoeugenol	1.0
Cananga oil	10.0
Geraniol	10.0
Siam Benzoin	5.0
Ylang-Ylang oil	5.0

G. Neumann, *Kosm., Parf., Drog.*, 4:36, 1957.

Macrocyclic Musks

This is the thirtieth anniversary of L. Ruzicka's paper on the constitution of Civettone in *Helvetica Chimica Acta*. This work had been registered as a sealed letter in 1924 and the first Swiss patent on the synthesis of cyclopentadecanone (Exaltone) was filed on June 16, 1924. Exaltone was marketed 2 years later. Exaltolide, made by the oxidation of cyclopentadecanone to the corresponding lactone was patented July 27, 1927 and marketed at a high price the following year.

In 1932, Schering-Kahlbaum A. G. patented a new process of cyclization based on the use of organic lithium derivatives in very dilute mixtures, which had been previously suggested by Max Stoll. The Schering—Kahlbaum cyclopentadecanone was marketed in 1935 as Muscosyn, but its sale was discontinued during the war and was not resumed. In 1933 Stoll produced Exaltolide directly without going through Exaltone by means of lactonization at high dilution and this brought about a very substantial reduction in price and permitted the general use of macrocyclic musks in perfumery.

Du Pont in 1935 patented the preparation of macrocyclic esters and lactones by depolymerization. The diester of brassylic acid was first marketed as Musc Rhodia and Musc BRB and is now named Astrotone.

Milpath (Wallace) is a combination of anticholinergic and tranquilizer. Each scored tablet contains 25 mg. of tridihexethyl iodide and 400 mg. of meprobamate. The preparation is supplied in bottles of 50.

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Readers' Questions . . .

Nose Drops: *Can you assist me with the formulation of a nose drop solution to relieve nasal stuffiness? If possible, I would prefer the mixture to be non-irritating and mildly antiseptic.* NEWARK.

Many pharmaceutical companies market preparations developed around their own anti-congestant compounds, but, except for possibly less effect in raising blood pressure, these are not necessarily superior to ephedrine mixtures. Oily preparations are no longer acceptable because of the possibility that they may cause lung irritation, so that an aqueous solution is called for. In the following suggested formula, ephedrine sulfate is used in place of the hydrochloride because it is somewhat less irritating, eucalyptus oil is antibacterial, chlorobutanol is a preservative, menthol provides the desirable cooling sensation, alcohol and glycerin are solvents and the dextrose is added to make the solution isotonic.

Ephedrine sulfate	**1.0**
Eucalyptus oil	**0.2**
Chlorobutanol	**0.5**
Menthol	**0.1**
Alcohol	**2.0**
Glycerin	**5.0**
Dextrose	**5.0**
Water	**86.2**

Mix these components, allow to stand overnight and filter thoroughly.

Denture Adhesive: *We would like to add to our line of dental preparations a powder that can be used to keep dental plates in place. We would appreciate any suggestions you may care to offer for a formula for starting experimental work.* CHICAGO.

About the simplest formula consists of powdered gum tragacanth mixed with an equal volume of starch powder so that the gum will disperse more readily in the presence of moisture. Instead of the tragacanth alone, you may also use a certain proportion of gum arabic to improve adhesiveness. It may be worthwhile, also to try out processed gums in powder form such as methyl cellulose, guar gum, and the various algins. The powder may well contain up to 5 per cent of powdered boric acid as a preservative and the inclusion of a non-persistant flavor or sweetener is also advisable

Epilating Wax: *Will you please provide me with a typical formula for a wax mixture that may be applied to the skin for removing superfluous hair?* CHICAGO.

Melt together 52 parts of rosin, 25 parts of yellow beeswax, 17 parts of paraffin, 5 parts of petrolatum and add one part of perfume after the mixture has begun to cool. Stir and pour into containers. Directions for use must include a warning that the mixture must not be too hot when applied to the skin or painful burns may result.

Waterless Hand Cleaner: *I would like to prepare a waterless hand cleaner and would appreciate receiving formula suggestions from you.* SAN FRANCISCO.

So-called waterless hand cleaners contain their own water but do not require additional water to do a cleaning job, although rinsing afterwards may be advisable. For light cleaning, a mixture based upon methylcellulose which picks up dirt which is then "rolled" off the skin may be useful. This consists of 4900 cps methylcellulose 15 parts, alcohol 5 parts, lanolin 0.5 parts, glycerin 6 parts, methyl paraben 0.2 parts, perfume 0.4 parts and water to make 100 parts. The paste is rubbed into the skin until it dries and rubbing is continued until the dirt is rolled off of the skin. For heavier duty, an emulsion of a low viscosity mineral oil may be used. The formula in this case consists of light mineral oil 25.0, emulsifying grade glyceryl monostearate 3.0 parts, 2 parts of Tween 20, glycerin 5.0, perfume 0.2 and water 64.8. The emulsion is thoroughly rubbed into the skin and then removed with cloth or paper towels.

Deodorant Foot Powder: *Will you please suggest a formulation for an absorbent foot powder with an added deodorant?* PHILADELPHIA.

Hexamethylenetetramine or methenamine, about three per cent in the mixture, s an extremely effective deodorizing compound, releasing minute quantities of formaldehyde in the presence of perspiration. The rest of the mixture should consist of about 80 per cent talc and 20 per cent highly absorbant colloidal kaolin.

Cold Cream: *What is the formula for a typical cold cream and how can it be improved for all-purpose use?* NEW YORK.

A good cold cream can be made from beeswax 16.0, mineral oil 45.0, spermaceti 5.0, borax 1.0 and water 33.0. The addition of one or two per cent of cetyl alcohol and /or lanolin up to 5 per cent will have a beneficial effect on the skin.

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(Continued from page 33)

offering a product for two widely divergent uses, or in the case of two manufacturers each offering the same product for a widely divergent use. In these cases we mean that one of the uses would restrict the product to prescription, while the other use would allow its sale over-the-counter. To go a step further in this speculation, it is entirely within the realm of possibility that a new use of an important nature requiring restriction of a drug to prescription distribution might be found for an old drug that has been sold over-the-counter for a very long time. The question arises, does this new use make this product a new drug? And one can be quite certain that in the opinion of the FDA, it would.

One may be certain that in any of these situations the FDA would step in and hold a hearing. And the action of the FDA would be based solely on the basis of protection of the public health. Furthermore, it seems that decisions by the FDA in such cases would be final. Any attempt to challenge them in court probably would be defeated, or if the FDA lost, the chances are that the Food, Drug, and Cosmetic Act would be amended to spell out the power that was denied them in the courts. The reason for this lies in the fact that there is an extremely high appreciation of the control of drug products in this country not only on the part of a large segment of the public, but also by the pharmaceutical manufacturers. These manufacturers are extremely jealous of the reputation of the industry in which they are engaged and they are anxious to close all avenues through which this reputation might be sullied.

By this we do not mean to imply that the industry agrees with the FDA on all things and will not fight them tooth and nail when they feel justified. However, do mean that the industry will back the FDA strongly when it is fighting a move that would weaken enforcement of the law in a way that could conceivably bring the industry as a whole into disrepute if such practices were not stopped.

DEODORANTS AND ANTIPERSPIRANTS

(Continued from page 37)

in addition to the monobasic acids listed, the dibasic succinic and glutaric acids have been identified, as well as a whole series of aminoacids. From the physiologic point of view, lactic acid is the most important. The lactic acid—lactate buffer system controls the acidity of the sweat and of the skin surface.

A comprehensive review of published information relevant to the chemical composition of sweat was prepared by Robinson and Robinson.[11]

Excessive perspiration resulting from a disorder of the sweat glands is called hyperidrosis. In certain protected areas (e.g., in the axillae and on the soles) hyperidrosis may cause maceration, sometimes leading to inflammation and secondary infection. A form of perspiration abnormality is anidrosis, i.e., a pathological inability to produce sweat. Chromidrosis is a condition in which discoloration of the sweat occurs, particularly on exposure to air. The term bromidrosis is applied to fetid perspiration.

Eccrine sweat is not of primary significance as a source of odor, as shown by Shelley, Hurley and Nichols;[12] such sweat, when collected by capillary attraction does not develop any odor on standing. Only when obtained, e.g., by guiding the edge of a test tube with pressure over the skin, does a collected specimen develop odor; but the origin of the odor resides primarily in the decomposition of certain contaminants, such as keratin and sebum, which are being acted upon by bacteria removed from the surface of the skin by this method of collection. On the other hand, apocrine sweat itself carries organic material of protein and lipid character, which upon reaching the skin surface is subject to bacterial attack and decomposition with formation of malodor. Since the apocrine glands are abundant in the axillary area (in association with eccrine glands) the perspiratory odor is particularly noticeable there.

Both the eccrine and the apocrine varieties of sweat are substantially odorless when collected from a freshly cleaned area. And while the action of skin bacteria gives rise to odor, filtration of mixed perspiration through a Berkefeld assembly (which removes suspended bacteria) prevents a change of the original odor on standing, as shown by Killian and Panzarella.[13] For the sake of completeness, it may be mentioned here that children of prepuberal age do not produce apocrine sweat, and do not, therefore, develop the characteristic underarm odor. In agreement with this fact is the observation that comparatively little axillary odor is found in the postclimacteric woman. On the other hand, healthy men of an advanced age group (i.e., past sixty-five) produce axillary odor, but only if they are capable of secreting apocrine sweat.

Antiperspirants

In formulating one of the several varieties of antiperspirants, the cosmetic chemist usually proceeds upon the premise that he has to employ some astringent chemical in order to produce an inhibition of the flow of perspiration. At one time, he may have explained antiperspirant action by postulating a coagulating effect of the astringent upon some skin proteins which may have been further intensified by the liberation of free acidity in the course of the reaction; all this was supposed to cause a swelling around the orifice of the sweat duct, effecting its constriction and thus a reduction of the flow of perspiration.

Killian[45] noted that an antiperspirant cream containing 12 per cent of anhydrous aluminum sulfate was effective in reducing thermally stimulated sweat-

Trade Literature

Anattene

S. B. Penick & Company, 50 Church Street, New York 8, has issued a 12-page brochure on Anattene, said to be the first vegetable coloring in the yellow to orange range offered commercially in both water-soluble and oil-soluble types in microcrystal, powder, and liquid forms. Extracted from annatto seed and produced with pharmaceutical precision, Anattene runs from light yellow "butter and eggs" appearance in small concentrations to a rich orange when used in heavy concentrations. The product has been tested for over a year and has met requirements for safety, stability, uniformity, and compatability.

Springs

Superb Spring Works, 34 A East Sidney Avenue, Mount Vernon, N. Y., has issued an 8-page booklet describing their complete line of manufactured springs. Consultation on design and application of springs can be handled in the company's experimental design service department.

Saraloy 898

The Plastic Sales Department, The Dow Chemical Company, Midland, Mich., has available a new 18-page booklet on Saraloy 898, Chemical Resistant Sheet, giving detailed information on this flexible thermoplastic, chemical-resistant lining for storage tanks, processing tanks, medium to large diameter pipes and fittings, fume ducts and hoods. The information includes data on its properties, the materials, equipment and procedure for installation, care and repair of linings and storage of the sheet.

Silicones

American Society for Testing Materials, 1916 Race Street, Philadelphia 3, has available at $1.50 per copy, the Edgar Marburg Lecture, The Industrial Chemistry, Properties, and Applications of Silicones, by Dr. Charles E. Reed, general manager of the Silicone Products Department, General Electric Co., Waterford, N. Y. The 48-page booklet is profusely illustrated.

Acetulan

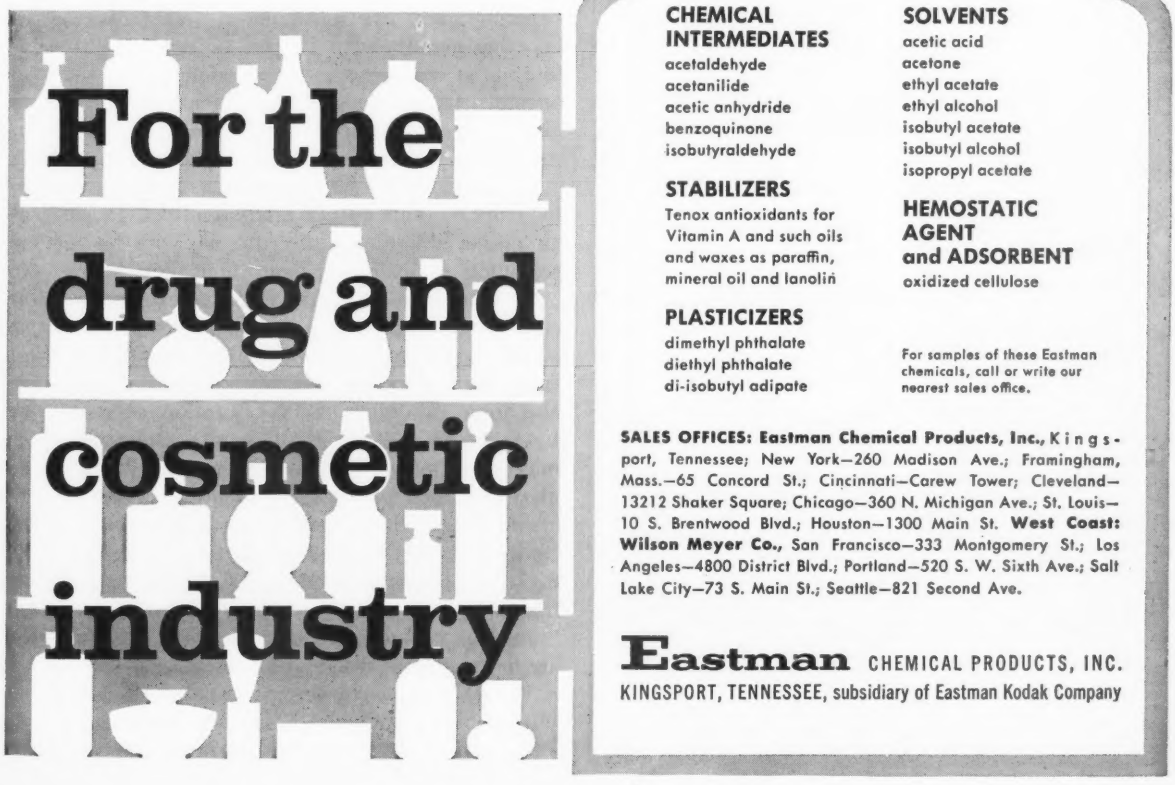
American Cholesterol Products, Inc., Amerchol Park, Edison, N. J. has issued a 4-page brochure on Acetulan, the latest acetylated lanolin derivative of this company. The product is described as a hypo-allergenic acetylated liquid derivative of pure lanolin.

Surface Active Agents

American Cyanamid Company, Manufacturers Chemicals Department, 30 Rockefeller Plaza, New York 20, has issued a major bulletin on surface active agents which includes a section on surface active agents in drugs and cosmetics and other products of this industry. The bulletin gives technical data on the seven types of aerosol surface agents offered in commercial quantities, including their use in basic formulations, data for testing effectiveness, and information on storage and handling.

Analytical Reagent Chemicals

Mallinckrodt Chemical Works, Mallinckrodt Street, St. Louis 7, has issued a folder describing its analytical reagent chemicals and listing the distributors of these products throughout the nation.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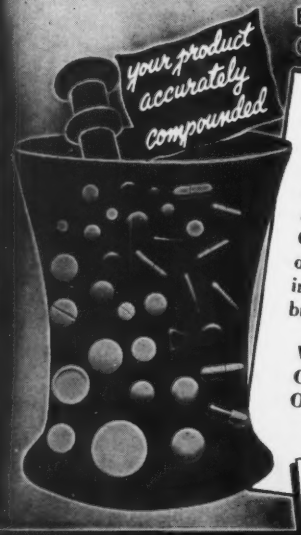

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ing by as much as 60 per cent on the first day of the test, and by 75 per cent on the second and the following days. This is evidence in support of the contention that antiperspirants based upon aluminum sulfate can effect a significant inhibition of the perspiratory flow. Concomitantly, a marked reduction of the bacterial counts was obtained following the first application, and maintained throughout the test period. By contrast, Brun and Manuila[14] found aluminum sulfate (and, incidentally, aluminum acetotartrate) but little effective as perspiration inhibitors, while aluminum chloride and nitrate produced observable results.

Similarly, Shelley, Hurley and Nichols[12] believe that the so-called antiperspirant cosmetics act essentially as deodorants, by virtue of two mechanisms: (1) inhibition of bacterial activity, and (2) neutralization of odor by chemical combination with the odorous substance.

With reference to the controversial character of this subject it should be noted that because of their polyvalent cation, aluminum salts can act as protein coagulants, and that therefore a reaction with some skin proteins at the ostium of a sweat duct, leading to a reduction of the flow of perspiration, is entirely conceivable. Moreover, there exists some direct pertinent evidence: The experiments carried out by Richardson and Meigs,[15] with the aid of an ingenious yet simple measuring device, indicate that an effectively performing aluminum salt can reduce perspiration markedly on a treated skin area, as compared with the untreated control area. It might be interposed that the latter observations apply to eccrine sweating only. However, since eccrine as well as apocrine glands occur in the axillary area, the inhibition of eccrine sweat alone would reduce the total output. Of course, the experiments of Richardson and Meigs do not preclude the possibility of a comparable response being given by the apocrine secretion.

Other relevant evidence may be found in a paper by Hopf.[16] This author attributes to a 15 per cent aluminum chloride solution the capacity for marked reduction of axillary perspiration (and odor). No other aluminum salt tested was found to approach the chloride in efficacy when applied either in solution or in the form of a commercially available (in West Germany) cosmetic preparation. This action of aluminum chloride is of short duration, at first, owing to its interruption by the flow of perspiration which may be stimulated by bodily activity, and particularly by heat producing food intake; however, following repeated application, its effect is said to become more lasting so that eventually it suffices to make the application only once a week or even less frequently, depending upon the individual case.

As to the indirect applicable data, the following are deemed to be worthy of interest:

The protein coagulating potential of the aluminum salts depends upon the anion, as shown by Govett and deNavarre[17] by means of *in vitro* experiments

employing egg white as the protein. The inorganic salts, viz., the nitrate, the chloride, the chlorohydrate and the sulfate of aluminum were found to be powerful coagulants, while the organic lactate and citrate are weaker in action; the phenol sulfonate (or sulfocarbolate) occupies an intermediate position.

A method, similar in principle, but employing the coagulation of Hammarsten's casein, is that of Christian and Jenkins[18] who applied it to a comparative study of aluminum salts.

Other indicative evidence for the coagulant and, therefore, potentially constrictive action of aluminum salts is furnished by experiments on shrinkage of frog skin and on its permeability to water. With aluminum sulfate and chlorohydrate applied in concentrations ranging from 1 to 15 per cent it was found that, depending upon the concentration, there was a marked shrinkage of this skin, also a decrease of the osmotic flow through it. Urakame and Christian[19] adapted radioactive tracer techniques to permeability studies on frog membranes in an attempt to obtain correlation with astringent and antiperspirant efficacy.

For the sake of completeness of record, it should be mentioned, however, that a protein precipitant is not *ipso facto* an acceptable antiperspirant, as has been demonstrated by Manuila[20] in the case of such typical agents as phosphotungstic, sulfosalicylic and tannic acids.

At any rate, the available experimental evidence tends to suggest that the action upon the axillary skin area of the so-called astringent aluminum salts is a matter of degree of effect, rather than one of a categorical assertion or denial of the existence of such an effect. It is unfortunately true that there is no published account of a truly accurate evaluation of the relative antiperspirant effects of the various astringent salts, although some recently published methods, e.g., that by Herrmann, Prose and Sulzberger,[21] endeavor to approach this ideal. *(To be concluded)*

KOBOLD A HEMO-GOBLIN

(Continued from page 39)

subject. Cobalt salts elicit little local activity on intact skin beside astringency. Dermatitis has been reported[38] from contact and an antigen-antibody reaction has been postulated.[39] The salts exhibit some local irritation on mucous membrane resulting in and accounting for anorexia or vomiting in some individuals after oral consumption.[26] Diarrhea may occur from rectal therapy.[26]

A marked effect on the nervous system has been demonstrated with parenteral administration of cobalt salts. A characteristic vasodilatation occurs with resulting drop in blood pressure[40,41] and increased respiratory frequency and amplitude. Hermann and co-workers[42] stated that cobalt injection reduced the effect of adrenalin or histamine on blood pressure. Stuart[43] reported intravenous injection of cobalt salts

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to affect the central nervous system directly causing tremors, chorea, and convulsions followed by paresis. In frogs, medullary stimulation is noted prior to spinal cord stimulation.

Some investigators report cobalt enhanced insulin activity in the blood of rabbits and cats,[44,45] but this has not been demonstrated in dogs[46,47] or humans.[44] Other workers[48] reported cobalt chloride opposing the action of the hyperglycemic-glycogenolytic factor in rats. This hyperglycemic action was unable to be demonstrated by Grant[49] while Ellis et al[50] attributed the cobalt hyperglycemia induced in rabbits to sympathetic nerve stimulation. It is evident some differences of opinion exist regarding this biochemical activity.

Another biochemical phenomena with which cobalt is associated is the binding activity of the adrenocorticotropic hormone, ACTH, for cobalt ions in acid solution.[51] The inhibition of liver arginase caused by antibiotics such as chloromycetin, tetracycline and penicillin was reportedly reversed by cobalt.[52] High concentrations of this metal, however, inhibit liver arginase by formation of a cobalt-arginase complex.[53] Hydrolysis of glycylglycine and glycylleucine in normal human serum is activated by cobalt ions.[54] The cobalt ion was reported to be necessary to activate hexokinase in the phosphorylation of carbohydrated required by retinal tissue.[55]

The cytomorphologic responses to cobalt administration, especially those of hematopoietic import, have been studied and reported. Polycythemia, an excess of erythrocytes in the blood, has been reported in all species of animals studied. This response appears to be attributed to stimulation of red bone marrow as evidenced by marrow hyperplasia, increase in megakaryocytes, and general proliferation of hematopoietic elements.[56] Other erythrogenic organs also exhibit stimulation.[57] Spleen, liver, kidney and suprarenals demonstrated increase in extra-medullary erythropoietic moieties. Erythremia, excessive production of erythrocytes with cyanosis and splenic enlargement, has been reported.[57] After cobalt administration, marked increases in erythrocyte forms take place particularly among the immature structures.[26] It has been demonstrated that the polycythemic response is due to an increase in cell volume rather than plasma volume.[58,59,60,61,62] Hematocrit values rise.[58,63,64] The extent of polycythemia and the rapidity of onset are proportional to the dosage of cobalt.[65] This phenomena has been shown by Marshall[66] to be a true polycythemia and Weissbecker[26] offered data which marked it as different than polycythemia vera. Reticulocyte counts increase prior to or concurrently with erythrocytic increase in animals.[59,66,67,68,69] This increase in humans is noted during erthyroctye increases usually within one week after initial dosage.[26,70,71] No leucocytic or thrombocytic changes occur.[70] The osmotic resistance of erythrocytes and the Icteric Index are not influenced by cobalt administration.[26] Van Dyke[72] reported that longevity in the erythrocyte was not influenced by cobalt. Human red blood cells produced by cobalt stimulation are normal in appearance and have a normal survival time when transfused.[70] The addition of vanadium and copper appears to stimulate the erythrogenic effect of cobalt[73] and the presence of manganese heightens the response to cobalt.[74]

Generation of hemoglobin accompanies the polycythemia resulting from cobalt therapy. Iron and copper are required for this increase in hemoglobin.[75,76,77] It has been established that cobalt does not substitute for iron in the hemoglobin molecule.[78] The oxygen affinity of hemoglobin is not affected by cobalt administration.[61,79] Brewer[80] showed that cobalt induced hemoglobin increases at a rate more rapid than does erthropoiesis by obtaining the former response at sub-stimulative erythropoietic cobalt dosage levels.

Toxicity

A summary review of toxicity studies reveals considerable experimentation has been reported but that differences in opinion exist relative to pancreatic and thyroid involvement. Some acute and chronic toxicity studies in animals and humans are detailed in view of their possible interest to the reader.

Acute Toxicity.—In man, oral doses of 500 mg. of cobalt salts cause nausea and vomiting presumably due to gastrointestinal irritation.[26] In divided doses, 1200 mg. daily for 6 weeks resulted in no toxic symptoms.[70] Some individuals exhibit a contact dermatitis to cobalt manifested as a skin rash.[81,82] Oral administration may also elicit this response in sensitive individuals. Discontinuance of medication clears the condition. Marston[83] does not consider cobalt salts to be extremely toxic and reports no literature concerning a single, lethal oral dose of a cobalt compound. Parenteral dosage in humans of 40-50 mg. of cobalt chloride reportedly resulted in vasodilatation, temporary fall in blood pressure, and frequent vomiting.[26,41]

Acute lethal subcutaneous dosage in mice has been reported as 30 mg./Kg. of elemental cobalt.[84] Intraperitoneally in mice the LD_{50} of a cobalt complex is reported at about 1000 mg./Kg.[85] Copper and iron were demonstrated to be more toxic than cobalt by this same technique.

Chronic Toxicity.—Following the acute toxicities above mentioned, it is desirable to consider some of the chronic toxicity data. In rats and dogs, chronic oral dosing at 0.1 to 0.2 mg./Kg. elemental cobalt or parenteral dosing at 0.1 mg./Kg. have not produced toxic symptoms.[80,86,87,88,89] At 2.5 to 10 mg./Kg. orally and 0.6 mg./Kg. parenterally over long time periods, weight losses but no pathological changes have been demonstrated in rats.[90,91,64,89,92,93] The loss in weight was attributed to anorexia. Chronic guinea pig[94] and rabbit and dog[41] toxicity studies indicated no apparent toxicities. Histopathologic studies in rats at 100 to 160 times the human dose of co-

balt revealed no significant degenerative changes in parenchymal organs as evidence of toxicity.[95] Possible hypertrophy of heart, adrenals, and spleen were studied by Van Liere and Edwards.[96] No significant differences in weights of these organs were noted in cobalt polycythemic rats. Goldner, Volk and Lazarus[97] found that large intravenous doses of cobalt in rabbits resulted in loss of αcells from islets of pancreas. This action was also noted in guinea pigs.[98] Fodden[99] reported degenerative morphologic changes in pancreatic αcells. Further work on αcell damage by Goldman, Volk and Lazarus[100] indicated the damage previously reported as a cobalt αcell toxicity was not damage to the pancreas but was a liver damage. Holt and Holt[101] conversely reported an increase in αcells after successive daily injections of cobalt and reported no pathologic changes in these cells. Fodden and Read[102] confirm these results and report cobalt does not incapacitate the function of the αcells. Other animal studies on chronic toxicity have been reported and are noted for reference.[103,67,95,104,105]

Chronic human studies are primarily oral because of the possible adverse effects noted with parenteral administration of cobalt. At 0.07 mg. to 0.21 mg./Kg. elemental cobalt no toxicities were noted over extended periods.[106] Chronic studies at 0.2 mg. to 0.5 mg./Kg. indicated the drug to be well tolerated.[107] Dosage at 0.75 mg./Kg. daily for 11 weeks resulted in no significant toxicities.[70] Pain was recorded in cases of myocardial infarction at a 1 mg./Kg. level, but disappeared after withdrawal of the medicinal. Some gastric disturbances as well as a report of sub-sternal angina-like pain were reported in a chronic study at 0.25 to 0.85 mg./Kg. dosage levels.[108] Studies in infants and children at 2.3 mg. to 7.0 mg./Kg. indicated anorexia as the only toxicity noted.[65] A study of administration to prematures[109] at 12.5 mg. to 18 mg./Kg. indicated a lack of toxicity and normal growth response compared to controls. Extensive liver function studies on pregannt women under cobalt therapy revealed no evidences of toxicity.[112] Other human chronic studies noted for reference include:[110,111,61].

Adverse reports of Kriss and associates[113,114] were concerned with the appearance of thyroid enlargement, alteration in thyroid functions and hyperplasia of the thyroid gland in patients administered cobalt salts. Jaimet and Thode[115] in a similar study at higher dosage levels and for a longer period of administration were unable to discover clinical signs of hyperthyroidism or thyroid enlargement. A single case of myxedema induced by cobalt has been reported.[122] Other workers[116] were unable to demonstrate change in iodine metabolism or thyroid function. Using radioactive iodine to test the effect of cobalt on thyroid, no inhibition of function or weight gain was discernible.[116] A report on 5 cases by Klinck[117] attributed hyperplasic activity without malignancy to cobalt. A report by Holly[112] including extensive investigation on animals failed to confirm the findings of Kriss.[113]

Prolonged chronic toxicity studies involving con-

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tinuous toxic doses of cobalt compounds to animals both by oral and parenteral routes reveal nephrotoxicity,[118] growth failure,[83] and toxic lesions of the liver.[94]

Mechanism of Action

The exact physiological mechanism of action of cobalt in hematopoiesis is not known. Both mediation through hormonal involvement and direct cell stimulation[68] are possible considerations. The direct anoxia of bone marrow cells to stimulate erythropoiesis was hypothesized by Barron.[119] Theory relative to endocrine activity and splenic effect has been postulated by Wintrobe[120] accounting for the erythrogenic effect of anoxia. Other workers[121] hold that cobalt does not elicit hemapoiesis as a compensatory response to anoxia. This latter opinion is supported by evidence from the work of several researchers.[29,95,89]

Choline and choline esters,[123] ascorbic acid,[119,60] cysteine,[79,124] and EDTA[125] inactivate cobalt. While some workers hold this may be explained in terms of blocked anoxemic response, other investigators feel that because of the evidence that anoxia is not the mechanism of action, that the inhibition appears to be due purely to chelation of cobalt.[79] The parenteral heavy metal poisoning action of cobalt overdosage can be treated with dimercaprol.[40]

Kato and Job[126] presented evidence that cobalt mobilizes iron from bone marrow and spleen, but this is not construed to be the mechanism of action since iron without cobalt is without effect in many cases of unresponsive erythrogenesis. Parenteral radioactive iron appeared more rapidly in bone marrow of rats administered cobalt than in controls.[127] A fall in serum iron followed by an increase has been demonstrated in humans administered cobalt.[7] A binary action of cobalt was postulated by Coles[128] involving a direct erythropoietic stimulation and an increased iron utilization through effect of altered iron metabolism.

The possibility that cobalt is converted to cyanocobalamin thus producing hematopoiesis is refuted by evidence that cobalt causes this response in cases which were refractory to cyanocobalamin and liver[89] and that cobalt has no effect in pernicious anemia.[129]

The spleen is not considered to be an essential factor in cobalt activity since splenectomized animals show polycythemic response.[119,130] Cobalt was thought to act by increase in blood catalase,[131] but this may be explained as due to the greater availability of iron.

Treatment of Anemia

In iron deficiency anemias combined cobalt-iron therapy reportedly demonstrated satisfactory responses manifested by increased erythrocytes and elevated hemoglobin.[111,65,71] The administration of cobalt-iron yielded responses in cases unaffected by simple iron therapy.[103,65] Positive clinical responses were reported in cases of chronic hypochromic anemia.[132,111,70] hyperchromic anemia of pregnancy,[133,112,134,135,136] anemia due to hemorrhage, iron deficiency anemia in prematures,[128,109] infants,[65,71,109,138] and children.[103,65,128] This element is reportedly effective in treatment of anemia resulting from low protein diet and hypophysectomy.[25] Clinicians have reported the response to cobalt therapy of patients diagnosed with simple chronic anemia associated with infections and chronic systemic diseases including anemias accompanying chronic sepsis,[106] cancer,[111,108,70] arthritis,[70,139] tuberculosis,[70,139] renal involvement,[107,139] and rheumatic fever.[139] Response to cobalt therapy in cases of aplastic or hypoplastic anemias have been reported[65,140,141] as well as effect in hemolytic[70,142] and sickle cell anemias.[143,144]

Stohlman and Roth[145] report cobalt to be ineffective in sickle cell anemia. Cobalt is of no value in the treatment of pernicious anemia[70] nor is the drug of value in leukemia.[70]

A panel consisting of the editorial board of Blood, the journal of hematology, discussed the administration of cobalt in anemia therapy.[146] Individual panel members and the moderator expressed their opinions on the use of cobalt preparations in anemia and the use and value of cobalt to potentiate iron therapy in the treatment of iron deficiency anemias. In reviewing their statements, the following summary might be applied. There is a need for more data on the mechanism of action of cobalt in anemia. Further, the possibilities of toxicities should be more completely studied in controlled experiments. The panel members express personal objection to combination drug therapy. The polycythemic effect of cobalt is recognized although the potentiating effect on iron is questioned. The value of cobalt in shortening the response to iron therapy from 6 to 4 weeks is questioned in light of exposure to possible toxicities. Members of the panel qualified their views because of limited personal experience with cobalt. They reported failures, however, of cobalt therapy in cases of hypoplastic bone marrow, myelofibrosis, sickle cell anemia, "refractory anemia," congenital hypoplastic anemia, aplastic anemia, and Mediterranean anemia. Beneficial results were noted in anemia of chronic nephritis.

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ETHANOLAMINES IN TOPICAL PREPARATIONS

(Continued from page 41)

period (total of 29 doses), of 6.25 per cent thioglycolic acid solutions adjusted to pH 9.2 with either monoethanolamine or ammonium hydroxide. The data indicate that the less volatile monoethanolamine salt produces greater local skin damage, namely, erythema and edema, than does the corresponding lotion containing the ammonium compound. That monoethanolamine thioglycolate is more toxic than ammonium thioglycolate is evidenced not only by the slightly higher mortality ratio obtained with the former lotion, but by the fact that these rabbits survived fewer exposures. A comparison of local skin damage resulting from treatment with monoethanolamine thioglycolate and ammonium thioglycolate is depicted in Figure 1. In the case of the monoethanolamine thioglycolate-treated subject (Figure 1b), the local effects are evidenced by the presence of numerous petechiae, which are not seen in the ammonium thioglycolate-treated animal (Figure 1a).

Microscopic examination of the kidney section of rabbits inuncted with up to 4.0 ml. of ammonium thioglycolate per kg. body weight showed no pathologic alteration attributable to treatment (Figure 2a). With monoethanolamine thioglycolate, the routine kidney sections of the 3 rabbits inuncted with 4.0 ml. per kg., and 1 of the 3 rabbits inuncted with 2.0 ml. per kg. showed moderate to marked swelling and basal vacuolation of the convoluted tubular epithelium, with narrowing of the lumens. Frozen sections from the same animals stained with Oil Red O showed moderate to marked fatty change in the epithelium of the renal convoluted and collecting tubules (Figure 2b), and a slight to moderate fatty change in the liver, in contrast to the normal absence of demonstrable fat in these tissues from animals receiving ammonium thioglycolate. No other pathologic changes attributable to treatment were seen in any of the tissues sectioned except skin.

Discussion

The data developed in this study indicate that a very low order of dermal toxicity exists for the ethanolamines when these agents are employed at concentrations up to 5 per cent in aqueous media and USP hydrophilic and white ointment bases. Under the conditions of our experiments, monoethanolamine was found to be slightly more irritating than the other amines studied.

Our data on the oral toxicity of mono- and triethanolamine in the rabbit are in agreement with that reported for the rat by Smyth et al. (1951).

The toxicity of thioglycolic acid, as well as several of its salts, has been studied extensively by Freeman et al. (1956a, 1956b). It is suggested, by the results reported in the present study, that the primary effect of monoethanolamine, as monoethanolamine thioglycolate, is to enhance the absorption of the thioglycolate ion, rather than to exert a toxic effect per se.

The report of Whitman and Brookins (1956) that monoethanolamine thioglycolate is considerably less irritating than ammonium thioglycolate has not been substantiated in the present investigation. Under our experimental conditions, greater skin damage occurred with the monoethanolamine thioglycolate lotion than with the corresponding ammonium thioglycolate lotion. It is this local damage which permits greater absorption of the thioglycolate compound, thus accounting for a slightly higher mortality ratio at the 4.0 ml. per kg. dose level. This view was substantiated further in that the thioglycolate ion was readily demonstrable in urines of rabbits on the 2.0 ml. and 4.0 ml. per kg. dose levels of monoethanolamine thioglycolate, but not in the urines of those receiving ammonium thioglycolate. In addition, moderate to marked swelling and basal vacuolation of the convoluted tubular epithelium, fatty change in the epithelium of the kidney tubules, and slight to moderate fatty change in the liver were seen only in the 2 high dose levels of monoethanolamine thioglycolate. While this is a reversible effect, and not con-

sidered to be a serious pathological lesion, it does indicate a systemic effect of treatment.

The present investigation confirms earlier observations (Draize et al, 1947; Lehman, 1949) that animals which survive the first few applications of a toxic agent are able to tolerate identical subsequent applications with decreased toxic manifestations. This is believed to be the result of skin changes which alter the absorption rate of the toxic substance. In the present study, monoethanolamine thioglycolate produced an initial severe local reaction in the skin which was followed by systemic effects. For example, thioglycolate ion could not be demonstrated in the urines of rabbits treated with monoethanolamine thioglycolate, at the 2.0 ml. per kg. dose level, once these animals had survived the initial toxic phase (about 10 applications).

It must be pointed out, however, that the doses of both monoethanolamine thioglycolate and ammonium thioglycolate employed in these animal studies are much in excess of the exposure that could result from waving human hair. Therefore, although monoethanolamine thioglycolate is definitely more toxic than its ammonium counterpart, we do not consider the use of the former compound in waving lotions as being significantly less safe.

Summary

In subacute dermal toxicity studies employing the rabbit, mono-, di-, and triethanolamine were shown to have a low order of toxicity. Under the experimental conditions employed, monoethanolamine was found to be slightly more irritating than the other amines studied.

Monoethanolamine was found to be considerably more toxic than triethanolamine when these compounds were administered orally.

Percutaneous absorption of monoethanolamine thioglycolate is greater than that of ammonium thioglycolate in the rabbit.

Dermal applications of monoethanolamine thioglycolate at high dosage levels, as compared with ammonium thioglycolate, resulted in a slightly higher mortality ratio, produced much more severe local skin damage, and elicited histopathological changes in kidney and liver.

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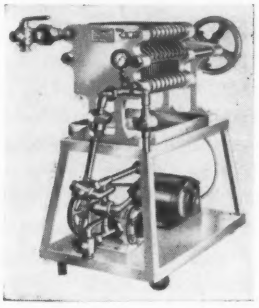

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(*Continued from page 45*)

exposure, or exposure to a more concentrated vapor leads to more permanent staining which frequently may be irritating. Over exposure to the vapor may cause dessication and burning. Caution against inhalation of the vapors must be observed because of their caustic property. The angle of the nose and the cheek was selected for study, not only because of its oiliness, but also because the two sides of the nose permitted comparative sampling.

Our first experiments were concerned with oil removal and replacement. It is generally conceded that removal of the skin's natural emollient by even as gentle a means as soap and water washing decreases the skin's self protective ability,[10] hence the need for replacement. Replacement of skin oil is made from the sebaceous glands beneath the surface. An ideal cleansing method would remove surface oil, yet facilitate natural restoration by drawing replacement oil out of the sebaceous gland pores and onto the surface. Soap and water does not do this. After such cleansing, the skin surface is oil deficient for up to several hours. In attempting to measure removal and then the rapidity of restoration of natural oil after various cleansing techniques, it was necessary to measure the oil that was on the skin before and after each treatment. The oil was removed by direct tissueing off with lens paper. This oil smear was then stained by exposure to osmic acid vapor in a closed chamber. The staining was accomplished in minutes, but for convenience and consistency, all samples remained in the chamber for 24 hours. Figure 1 shows a lens paper tissue sample of oil taken from the side of the nose of one of the girls on test—before and after soap and water cleansing. Each girl had been instructed to clean her face with nothing but soap and water twice a day for the week preceding sampling. The next figure (Figure 2) shows oil samples from a series of nine women before and after soap and water cleaning. Visually, one can see a reduction in staining intensity and in the total stained area. To make the comparison more quantitative, the pigmented areas were traced through onto millimeter graph paper and the transfer areas measured as square millimeters by direct count. Figure 3 shows these data from the nine individuals on this test panel. Comparison of cleansing methods followed. Each subject cleaned her face first with soap and water for one week, then with cleansing cream for one week and finally with soap and water followed by cleansing cream for one week. The residual oil on the nose was stained by a 30 second exposure to 5 per cent osmic acid vapor. The visual comparison is shown for three of the subjects in Figure 4. The oil quantitation for subject MF is shown in Figure 5. This particular subject was a fair skinned Irish-American girl and clinically would be considered moderately oily for her age (26). From these data, it is evident that soap and water alone removed more oil than cleansing cream alone, but the application of a cleansing cream rinse after washing with soap and water hastened restoration of an oil film.

Restoration of oil to a deficient skin may be of advantage particularly if done immediately after washing as in the preceding experiments, but in many instances, the desirable result is the removal of excess oil from the skin surface, without producing an overcompensatory oil production. This need is great with the young skin, notably in individuals of acne age. We have studied various cleansing techniques on a large group of teen age girls. Soap and water, cold cream and vanishing cream were compared as cleansing agents. Each method was used for a full month. Control months during which the subjects were unpoliced by their dormitory supervisors were interposed in the series. Control was reasonably good although admittedly teen-agers are not the most conscientious subjects for experimental work. Nasal skin oils were removed on lens paper tissue, stained with osmic acid vapor and quantitated in terms of square millimeter areas. The comparison of cleansing methods is shown graphically in Figure 6. Soap and water was superior, but cold cream cleansing was quite efficient, and even vanishing cream reduced the oils below the levels in the normal unsupervised cleansing controls. The data is presented in statistical form because individual variations were great. The girls were predominantly dark and oily skinned, but some were very fair and dry skinned, and many were of highly mixed stock. A more uniform population group may have given smaller ranges, but variation has been partially corrected here by using each individual as her own control for the statistical analysis. Since completing this study, I have recommended fairly frequent cold cream cleansing to my acne patients.

Thus far, we had studied oil on the skin surface and the influence of various cleansing conditions on its removal. We were naturally interested in what each cleansing technique did to residual oils not only on, but within the epidermis. The comparison was made using soap and water, an acid side emollient cleanser, an alkaline side emollient cleanser and ordinary cold cream. The cleansers themselves did not stain with osmic acid vapor after three minute exposures. However, skin previously cleaned with the toiletries in some cases stained quite intensely after the same three minute exposures (Figure 7). To determine what was happening beneath the surface, biopsies of the treatment sites were taken. Histological sections were prepared with no additional staining. The photomicrographs in Figure 8 show considerable stained emollient within the epidermis, particularly with the acid side cleanser.

After the study of oil removal with cleansers, the next step was the study of the effect of added emollients such as lotions and creams and their influence on skin oil. Much has been attributed to the effect of pH, emulsifiers, surfactants, etc. on the emolliency and penetrability of lotions. Therefore, a study of representative hand lotions of well-known brands was

undertaken. The lotions themselves were not stained by osmic acid, yet when skin previously pretreated with the lotions was exposed to osmic vapor, very definite patterns were formed. Figure 9 shows skin sites which had been lightly massaged with lotion, then stained by three minute exposure to the vapor. The lotions are identified by initials. One, 'C,' seemed to stain more intensely than the others. 'O' is untreated skin. This stained well. Biopsy specimens taken from treatment sites were processed without additional staining. Photomicrograph comparisons of these sections are shown in Figure 10. All lotions seemed to increase epidermal emolliency, the acid side preparations most dramatically. This confirmed the observation on cleansers.

Study of increased oil production as a result of the use of therapeutic or cosmetic creams introduced a complication because some of the "enriched" creams contain materials stainable with osmic acid vapor. Even cold cream when exposed to the pure osmium tetroxide for 72 hours develops quite a color. This point is illustrated by Figure 11 which shows a comparison between 5 per cent, 10 per cent and 100 per cent cold cream and a very much enriched hormone cream. That the stained material was not hormonal, but rather was inherent in the cream itself is evident in the next illustration which shows a series of steroid hormones in mineral oil solution after they had been exposed to the osmium tetroxide (Figure 12). None of the steroid hormones stained. Obviously, then, study of enriched creams by this technique demands care in order to avoid artifacts. Therefore, rather than short term experiments, it seemed that any influence on natural oil would best be shown by prolonged use tests. The skin should also be free of residual cosmetic cream before oil samples are taken. My interests have often been entwined with endocrinology, therefore, the first series of enriched cream studies involved these agents. Creams and oils containing estrogen, progesterone, testosterone and hydrocortisone as well as enriched placebo controls were applied daily under impervious closed patches (Elastopatch) to the skin of two individuals for two weeks. At the end of this time, the skin was thoroughly cleansed by bathing with soap and water and the inunction sites were exposed to osmic acid vapor. The test areas after staining are shown in Figure 13. Both progesterone and testosterone apparently greatly increase the surface oil. This observation on the human skin is in accord with theory[1] and with experimental animal data.[11] Tissue sections from the application sites were taken. The photomicrographs shown in Figure 14 confirm the apparent increase in epidermal emolliency following an application of either testosterone or progesterone in both man and woman. Perhaps contrary to theory, estrogen cream did not depress emolliency. It did, however, produce appreciable plumping of the epidermis. This finding has been established as a topical estrogen effect.[12] The hydrocortisone product

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apparently has no epidermal emollient or morphological effects.

There remained now, the problem of applying these techniques to "use test" evaluation of therapeutic cosmetic creams. This demanded improvement in sampling technique and in a more rapid means of quantitation. It was achieved in the following manner. First, a series of olive oil standards were prepared, using several concentrations of olive oil in an inert dispersant, Bayol F. A. Whatman #40 filter paper was immersed in each olive oil solution. The papers were dried, then exposed to osmic acid vapor. The 72 hour exposure time was used even though it was longer than the time required for maximum color development because it takes about that time for the noxious vapors to exhaust themselves. The olive oil series is shown in Figure 15. Bayol F itself, stains very little. Finger print smudges are quite evident, thus showing the extreme sensitivity of the method. The intensity of staining is proportional to the olive oil concentration. Quantitation of this series was made by measurement of pigment density. A densitometer was made from an SVE projector and photographic light meter (Figure 16). The light-proof adapter was made of plywood and masking tape. The stained filter paper was then inserted between the light source and the meter. Light transmission was read and recorded. Since it is a reciprocal function of the depth of the stain, a calibration curve for the olive oil standards could be made. It is shown in Figure 17. Although the skin oils do not necessarily contain olive oil, their unsaturated component stains in the same manner as the ethylenic double bond of triolein. Thus, the olive oil standards furnish an arbitrary basis for comparison.

Now, to directly sample the human skin, one need only to apply a filter paper firmly to a selected skin area. A convenient pressure device is a clean cork. Any oil present on the skin surface can be directly transferred to the filter paper, its color developed in osmic vapor, the paper made translucent with Bayol, mineral oil or any other inert chromatography solvent and then the intensity of color read as the reciprocal of light transmission. The transmission when compared with the olive oil standard curve gives quantitation. Samples of oil taken from the foreheads of several individuals of a subject panel and quantitated by this technique are shown in Figure 18. Of particular note is the pore pattern as well as the amount of oil.

Using proper precautions to prevent artifacts from the enriched creams themselves, we have applied this method of analysis to the study of natural oil restoration. The osmic acid staining technique, therefore, has proved to be applicable to measurement of the removal of excess oil, the replacement of natural skin oils and the restoration of oil producing functions of the skin. I believe that the techniques have been developed to the point where they can be used for practical and reliable measurements of skin emolliency.

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OUTLOOK IN PHARMACY

(*Continued from page 48*)

distribution of drugs and medical and nursing supplies.

6. Introduction of new drugs with actions and potencies requiring personalized adjustment of dosage schedules, and characteristics requiring special storage and dispensing techniques, that will force physicians and the public to rely more and more upon the scientific knowledge and professional services of pharmacists.

Totally new concepts of drug therapy, nutrition and geriatrics are on the "drawing boards" in research laboratories and in clinics across the nation. Perfection of these new approaches to the preservation of "wellness" and the prevention and treatment of sickness, will bring startlingly new agents into use which, in many instances, will require constant medical and pharmaceutical supervision.

Gone are the days of the 5-grain dose, three times a day—for everybody. Future drugs will possess potencies too great for accommodation by the human body, except under skillful and personalized dosage adjustment. The very nature of the unconquered diseases yet to be prevented or treated effectively, suggests that their control will not likely be found in simple drugs.

The practicing pharmacist of the future can, if he so wills it, become more than a consultant in drug therapy. He can become a professional partner with the physician in the selection, use, dosage and administration of drugs. And this position will be held by properly qualified pharmacists, not by sufferance or mere convenience, but rather by necessity.

There can be little doubt that some authoritative local source will meet the daily needs of medicine for guidance in pharmacodynamics. It could be done by closed circuit television, or telephonic tape recordings. But this vital source should be provided "live" by pharmacists. I believe that many pharmacists in the years ahead will be working partners with physicians, because the problems of drug therapy in the future will be too involved for determination

without recourse to specialized guidance. And from this new domain of pharmacy will come the long-sought professional acceptance and public aspect that, at the moment, may appear to be waning, but which may actually be at the beginning of its upswing.

I believe pharmaceutical education can and will meet the challenging changes of the future. In support of this belief, and based on my hazardous predictions, I submit:

1. That pharmacy college enrollments should be increased by 25 per cent to insure at least 95,000 active men and women for the practice of pharmacy, and 25,000 additional for the inevitable professional manpower demands of other activities.
2. That college admission policy should not compromise on the moral, intellectual and social qualifications appropriate to members of the pharmaceutical profession.
3. That pharmacy colleges should welcome students with motivations and aptitudes for selling, management, business, and various technical laboratory services, as well as for the practice of retail pharmacy, rather than to seek primarily science-minded and purely professional-minded students, with near genius level capacities.
4. That we should recognize our stiff competition for bright young men from other vocations that are virtually closed to women. In view of the fitness of women for all types of pharmaceutical endeavor, we should look toward the "durable female" as a fruitful recruitment source.
5. That, within the undergraduate curriculum, specialization courses should be provided for all students who can determine their career preference midway in their training; but that colleges never relax their basic responsibility of qualifying every graduate as a thoroughly competent pharmacist.
6. That faculties should courageously and constantly experiment to discover better and faster teaching methods.
7. That realism and alert anticipation of new knowledge should govern the content of courses of study, and that annual "thinning and fattening" of course material should be accepted as a moral obligation by every instructor, in every discipline.
8. That every instructor should be held accountable for really effective teaching, and, if qualified, for research; and to these ends, teachers should be relieved of housekeeping drudgery, excessive teaching loads, and penny-pinching clerical duties.
9. That every college should provide the practitioners of pharmacy in its area of service with frequent and realistic refresher training; and that a substantial portion of the resources of every college of pharmacy should be applied to

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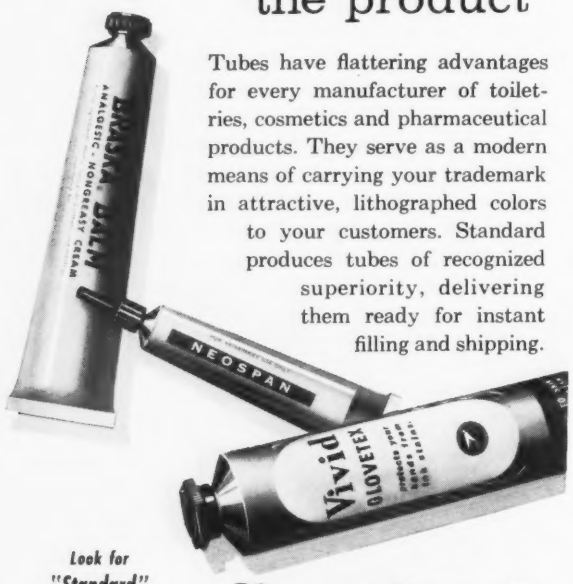

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combating obsolescence for the protection of the public, and the preservation of the profession of pharmacy.

10. That colleges adequately staffed, equipped, and financed (as recommended by The Pharmaceutical Survey) should offer an optional, extended professional course leading to the degree of Doctor of Pharmacy for talented students planning careers in specialized professional areas; and that some colleges, now offering limited graduate work, might render greater service by concentrating on this type of sound professional training.
11. That colleges should further strengthen graduate programs to produce qualified and talented teachers and researchers, and do so with the broadest possible utilization of the other departments and schools of the university; keeping in mind that not all colleges can, at this time, offer really Ph.D. level work in all of the disciplines of pharmacy.
12. That Deans and faculty members, with full consciousness of the professional stature of pharmacy, keep their eyes on the rising horizon, but never let their feet leave the solid ground where pharmaceutical services move the last 36 vital inches into the hands of patients and consumers.

And so it seems to me that education is squarely faced with the obligation to prepare future graduates for lifetime professional and intellectual growth, and to develop new and more effective means for protecting every pharmacist from his own self-destruction through frustration and obsolescence. Then, morale will climb to a high and satisfying level. In my view, these are the long-range objectives by which pharmaceutical education must be guided as it seeks to "meet the challenge of the future."

PACKAGES AND WOMEN

(Continued from page 53)

that go into a mask and make it so effective may be the very ones which lead her to say, "It smells as if it'll burn my skin." If this fragrance factor isn't taken into consideration the unfortunate end result may be "no sale."

Take another illustration. You've panel tested a deodorant or anti-perspirant preparation and found that 50 per cent of the women who tried your product liked it "better than" or "as well as" the product they usually use. However you and I both know that unless the method of application or the packaging for this product is as effective as its competitive counterparts, the final reaction to your test will be negative rather than positive.

The evolution of deodorant sticks is a case in point. At first evaporation was a problem which we

attempted to overcome by the use of foil wrap. Swivel-type cases and plastic push-up tubes have been more recent innovations. Today deodorant sticks sell on their own merits, yes—but also on the merits of successful, practical to use packaging!

Even the richest and most lubricating of all emollient creams should come under the scrutiny of the package designer. When everything else is set—the jar, the label, the complete package presentation, the color of the cream still plays an important role in the packaging picture. Which color looks the richest, the most softening and smoothing? Is it pure white? Is it a soft creamy color? Is it pink? Seemingly small factors such as this have a great deal to do with the impact of our merchandise and its acceptance by the ultimate consumer. . .

One of the complaints registered against label copy is the tendency it has to clutter a package and make it look "junky." But at the same time, if YOU were the customer and your own salesgirl, never having used a product before, which would you be the most inclined to choose? The product whose label copy gives you the complete "sell" and direction story or the product with inadequate label copy where everything is left to your imagination and your memory of advertisements and television commercials?

At the same time, label copy, like the best "tried and true" cook book recipes, should be "neat and sweet," and tell the product story simply and concisely. Too much copy can complicate and confuse a customer just as too little copy can strangle a sale by its very barrenness. . .

Women want brand identification too. They want to be able to spot the preparations of their choice quickly and easily when they walk into a cosmetic department. The "Evening in Paris" line is a good illustration of this. When purchasing "Evening in Paris," women expect the bottles to be blue, the labels silver and the gift sets blue and silver. There was a time when we felt the introduction of colors other than the traditional blue and silver might be a good idea, but any attempts in this direction quickly met with the response, " . . . but it doesn't look like 'Evening in Paris'!"

"Treat your merchandise preciously" is an old and often reiterated selling sentence. The more precious even an inexpensive piece of jewelry is treated, the more precious and desirable it becomes to the potential customer. So it is with cosmetics; very often the more expensively a product is packaged, the more value it takes on in the eyes of the customer. The cosmetic preparation that comes beautifully boxed and cellophane wrapped meets a definite need, a woman's need for luxury and prestige in her cosmetic packaging. To women, this type of packaging reiterates and reaffirms the value, luxuriousness and effectiveness of the product inside. This thinking may not seem very logical to you—

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but then the logic of the feminine consumer is a very special kind of logic!

If packaging is important in relation to the success and sale of cosmetics and treatment preparations, it is even more important when we come to the subject of make-up. . .

As an illustration, let's consider the eye appeal of a lipstick case. Every year these cases are becoming more and more beautiful and elegant looking. Regardless of the size of the lipstick mass itself, it's the size of the unopened case that is more often than not the important and deciding purchase factor. . .

Many other make-up items are also coming to serve the "double function" of being used at home and also carried in the handbag for use during the day and evening.

Obviously, cosmetic packaging of all sorts is not a complete and closed field unto itself. Instead it has been and always will be a phase of the cosmetic industry which revolves around and grows along with the needs, desires, prejudices and buying habits of American women.

NEW SALES APPROACH TO COSMETIC CONTAINERS

(Continued from page 55)

ished brass, polished nickel, dipped brass and dipped nickel. There was no lettering or other identification on these containers. Paper labels with the cosmetic manufacturer's name on them were glued to the outside of the tube.

In 1921, the first lipstick case to propel the stick from the case mechanically was patented by Scovill and two years later, the Company introduced the first propel-repel case and the basic form for modern lipstick packaging was set.

PATENT THOUGHTS AND TRENDS

(Continued from page 66)

Herewith are the main facts as gleaned from the opinion of the Court.

It appears that in the early 1930's Professor Karrer became interested in the flavins, which are yellow dyestuffs appearing frequently in the plant and animal kingdom. Since it was thought by some that Vitamin B-2 was identical with certain flavins, Karrer undertook the investigation of the vitamin B group, particularly vitamin B-2. Since his work required the extraction of a flavin which could be most conveniently obtained from sweet whey, and the flavin in question, lactoflavin, is present in very small quantities, it was necessary for Karrer to make arrangements for the processing of large quantities of whey

In 1934 Karrer approached F. Hoffmann-La Roche & Co. Ltd. of Basle, and asked it to support his investigations in the vitamin B-2 field by processing the whey in accordance with his instructions. Hoffmann-La Roche agreed to cooperate with him and actually began processing whey in accordance with the professor's instructions. The Swiss company advised Karrer that it was proceeding with the work on the assumption that he would grant it the sole right to exploit the manufacturing processes resulting from his investigations if his research proved to be of commercial value. The company also stated that if any process worked out by Karrer as a secret process showed considerable improvement over existing knowledge or if the process led to a patent the company would grant Karrer a participation in the net proceeds of the sale of vitamin B-2 products manufactured and sold by it. Karrer accepted the company's proposal by letter.

It appears that Swiss law looks upon this exchange between Karrer and the Swiss company as constituting a contract which may be designated as a special employment contract, the company owning all of Karrer's discoveries. While it was understood that the company would pay Karrer a percentage of the net proceeds of the sale of the products the contract did not state the exact percentage at the time but later an agreement on this point was reached between the Swiss company and Karrer. As a result of the collaboration with the Swiss company Karrer isolated natural vitamin B-2 and in 1934 determined the chemical structure of this vitamin. The next step was a synthetic process for its preparation. All of this was turned over to the Swiss company by Professor Karrer and this company proceeded to develop manufacturing processes for the commercial exploitation of the vitamin.

A number of patent applications were duly filed in various countries, Professor Karrer assisting the Swiss company in these matters.

In 1941 Karrer and the Swiss company entered into a formal contract specifying the percentage of net proceeds to be paid to Karrer was 5 per cent, this sharing to extend over a period of 12 years.

Karrer and the Swiss company had a similar understanding in 1937 relating to vitamin E which Karrer isolated and identified chemically. As regards vitamin E, a formal contract pertaining to the exploitation of this vitamin and fixing the percentage of net proceeds was entered into by Karrer and the Swiss company in 1938. Karrer was to receive 3 per cent of the net proceeds of synthetic vitamin E for a period of 12 years.

The Court found that the Swiss company at no time pertinent to the case in question had a place of business or a permananet establishment in the U.S.

or did it engage in any trade or business in this country. However, in 1941, the Swiss company and Hoffmann-La Roche, Inc., Nutley, N .J., entered into a contract whereby the American company was granted the exclusive enjoyment and use within the U.S. of all the Swiss company's secret processes in scientific developments pertaining to certain products, including the vitamins which had been synthesized by Karrer. In return, the American company agreed to pay the Swiss company 4 per cent of the net proceeds of its sales. Karrer was not a party to the 1941 agreement between the Swiss and American Hoffmann-La Roche companies. However, the American company was aware in 1941 that Karrer was entitled to a percentage of the net proceeds of vitamin B-2 and vitamin E sales made by the Swiss company.

The president of the American company felt that it should make the payments to Karrer even though it had no contract with him, and accordingly such payments were made. The American company paid U.S. income taxes on behalf of Karrer in the sum of $92,978.22 for the years from 1941 through 1945. Karrer himself paid $108,526.66 for the years from 1941 through 1946.

Karrer asked the Court to refund a total mount of $201,504.88.

The U.S. in opposing Karrer's contentions, took the position that the payments from the American company to Karrer were subject to Federal income tax because they were fixed periodical income to plaintiff from sources within the U.S., falling within the provisions of Section 211 (a) (1) (A) of the Internal Revenue Code of 1939.

Karrer's position was that the payments made to him by the American company were for services performed outside of the U.S. and are therefore not from sources within the U.S.

The Court ignored the fact that the payments were made by U.S. corporation, holding that the criterion for imposing the tax is that the "source" of the income to be taxed must be within the U.S. and that the source is not necessarily the payor but may be the property or the services from which the particular income is derived. The Court held that the payments made by the American company were not payments for the right to use any income producing property or interest therein belonging to *Karrer*. The Court also held that the contracts between Karrer and the Swiss company were not royalty contracts but special employment contracts.

In sum, the Court held that since the American company paid Karrer mounts due on an obligation owing to him by the Swiss company for services performed for the Swiss company by Karrer in Switzerland these payments do not represent payments for Karrer's rights or interests in property located in the U.S. but are rather payments for services performed outside the U.S. and therefore exempt from taxation by the U.S.

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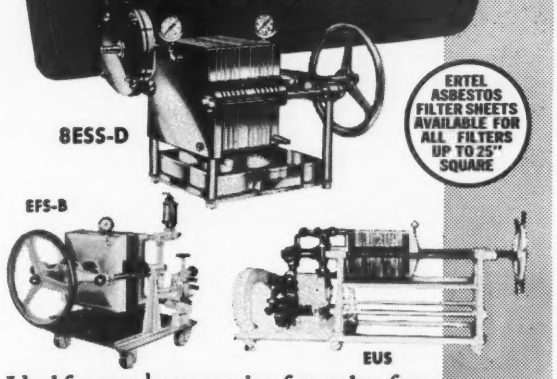

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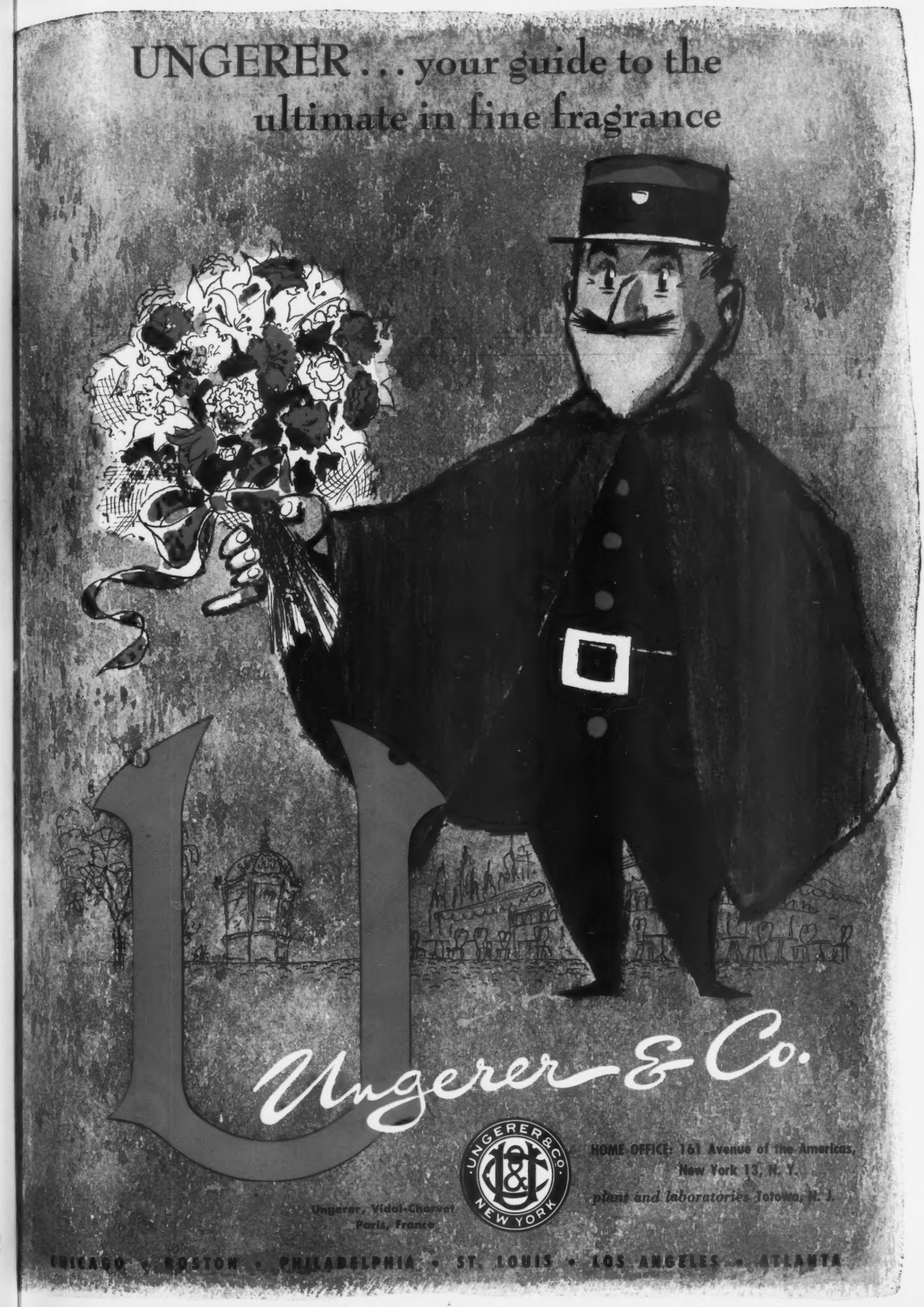
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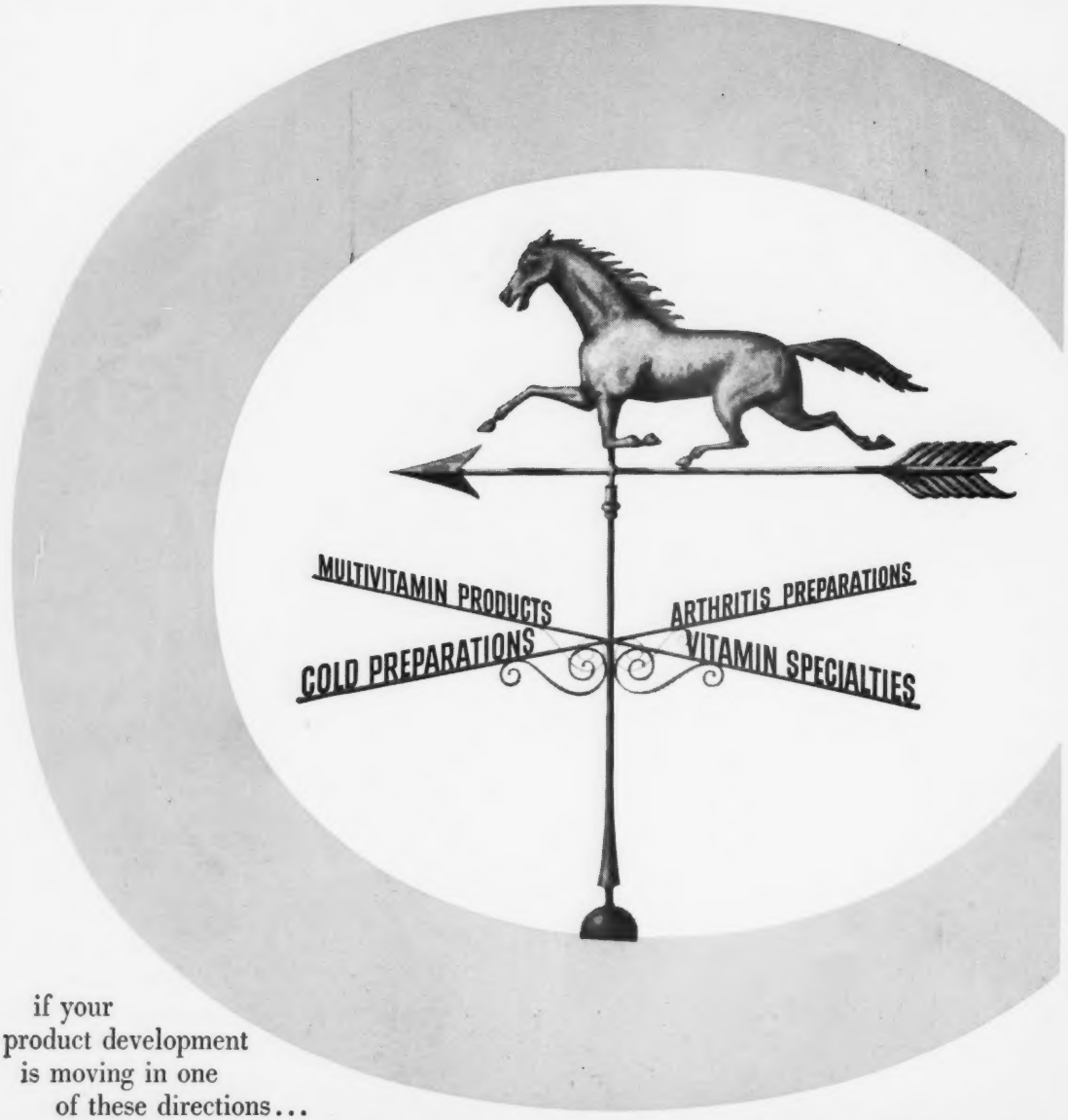

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